CHEMICAL INDUSTRIES

FORMERLY KNOWN AS "CHEMICAL MARKETS"

VOLUME XXXVII SEPTEMBER, 1935 NUMBER 3

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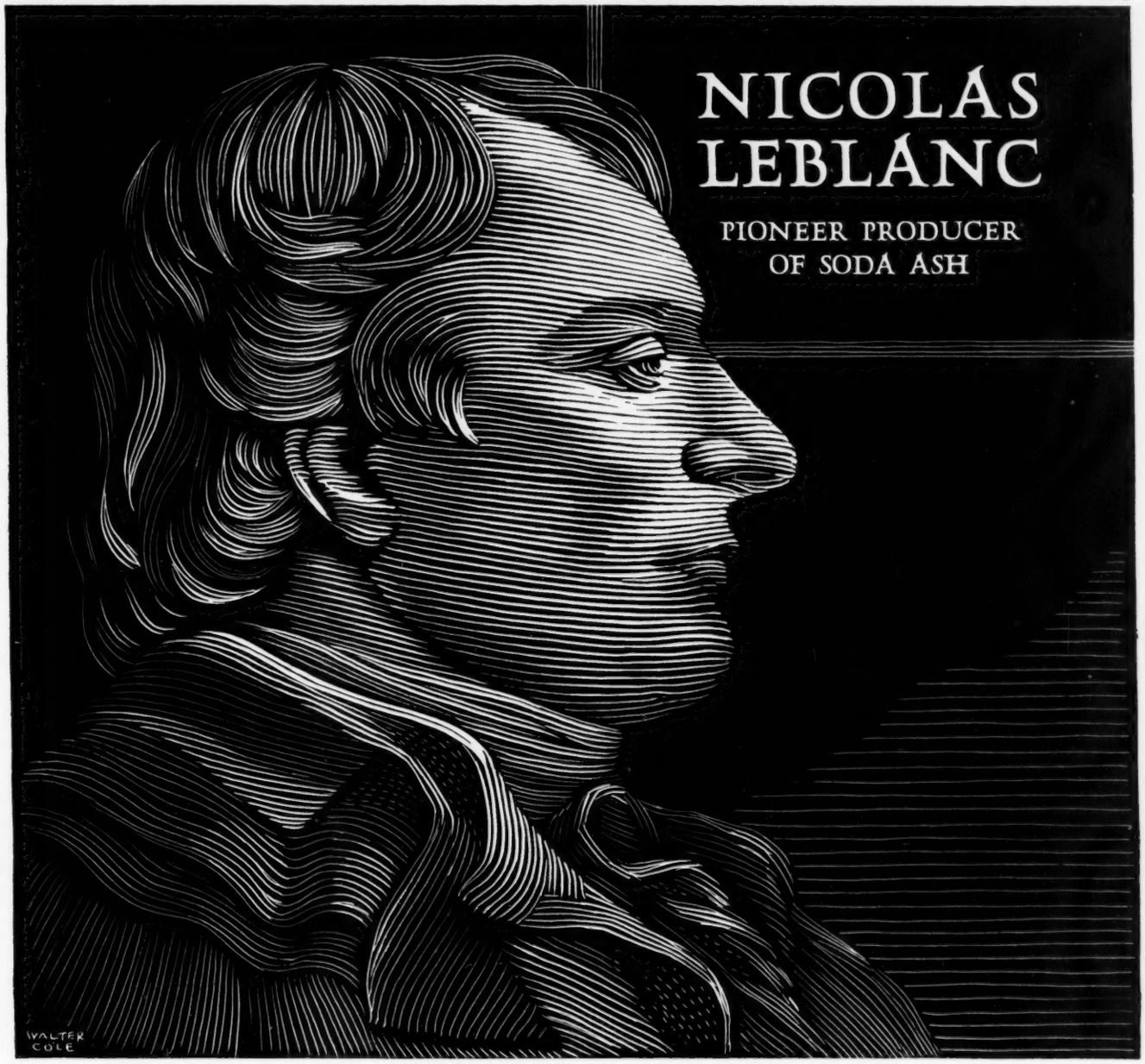
NUMBER ONE OF A SERIES OF FAMOUS PIONEERS IN CHEMICAL HISTORY



In 1791, Nicolas Leblanc won the prize of 2,400 livres offered by l'Academie des Sciences de Paris for his processs for making soda ash from salt. He never received the prize money, however. During the French Revolution, Leblanc's patents were voided and his plant wrecked by a mob. In dire poverty, in 1806, he ended his life by suicide.

WHEN Nicolas Leblanc built his soda works at St. Denis, France, nearly a century and a half ago, he established himself as the pioneer manufacturer of soda ash. Although his process was never used in the American alkali industry, it was not until 1895 that production of soda ash by the now universal ammonia-soda process exceeded production by the old Leblanc process. Mathieson, another pioneer producer of soda ash, starting operations at that same time forty years ago, has been in continuous production ever since. Mathieson Soda Ash has long been accepted by the chemical consuming industries as the standard of high, uniform quality.

The MATHIESON ALKALI WORKS (*Inc.*), 60 East 42nd St., New York, N.Y.

SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH AND HTH-15 . . .

Mathieson Chemicals

AMMONIA, ANHYDROUS AND AQUA . . . PH-PLUS (FUSED ALKALI) . . . SOLID CARBON DIOXIDE . . . CCH (INDUSTRIAL HYPOCHLORITE)

ADVERTISING PAGES REMOVED

The Reader Writes:—

From One of Our Consulting Editors

Though educated by you to expect sane and vigorous editorials in CHEMICAL INDUSTRIES, I am compelled to compliment you on "Competition vs. Recovery" in the August issue. It pictures the situation as it is and radiates good sense.

Bridgewater, Vt. T. B. WAGNER

Propaganda for the Simple Ptomaines

I am ordinately fond of end-products. A new-born babe is of less interest to me than an old man grumbling to his grave. That is an advantage, because I may observe my own decay, celebrate the loss of my next molar and contemplate, easily, the nearest youth, who has no inkling of ptomaines, never having heard of cadaverine, the ptomaine of the corpse—who is not acquainted, in short, with the last sojourn of the body before the flesh has sloughed and the skull, like a white bean, breaks through, grinning and triumphant.

Of interest, are the ptomaines of great cities and states. A long dead fish is the home of simple corruptions compared to the stench coming from the body politic.

I am no propagandist seeking to instruct the public in the appreciation of the nobler ptomaines,—neurine, formed during the putrefaction of meat and that beautiful amine, methylamine, found in herring-brine.

These are the clean ptomaines, quite different from the end-products of decayed senators, and you—Do you think because you are well and alive that you have no more responsibility than a pig in clover? If you are indifferent, you trail behind the slime of the corrupt politician, and you belong in the black column for your ooze is not so clean as a dead snail's. The reek of your apathy is almost stifling.

That is why I am the pessimist chemist, happier to be with one dead thing at a time, the clear, sweet virus in my test-tube. I perceive the meaning of these strange discharges, the clamor of the cities, despair in the countryside, discord everywhere, wrangling and corruption, your lively minds speeding on their way to a vague destination.

New York City HAROLD FALLER

This Makes It Even

I do not agree with Mr. Louis H. Schreiber. CHEMICAL INDUSTRIES is an interesting and smooth-reading magazine.

Alliance, Nebr. CLARK H. HAMILTON

Bright Chemurgic Future

I wish to challenge the doleful note on page 563 of the June issue of CHEMICAL INDUSTRIES. I cannot understand why the World Peace Foundation wishes to advertise an alleged hopelessness of American agriculture. The two quotations remind one of the Patent Office official who is reported to have resigned fifty years ago because there was no further progress in sight for American invention.

I attended the Dearborn Conferenće of Agriculture, Industry, and Science in May, and was much impressed with the earnest planning that is going on to take advantage of products already worked out by chemists for the utilization of farm products in industry. The Farm Chemurgic Council which has grown out of the Dearborn Conference certainly has some plans and prospects—the doleful outlook of the World Peace Foundation to the contrary notwithstanding.

I realize that certain matters brought up at the Dearborn Conference are controversial at present, but several of the plans seem wholly practicable and I am convinced are real chemical news. It is the greatest surprise to me if CHEMICAL INDUSTRIES gave much space to the "it can't be done" comments. You have seen too much of the chemical engineer in action against difficulties.

If the Dow Company can get bromine from the sea, I, for one, am inclined to think that their chemist, Hale, knows a few things about obtaining cheap alcohol. Hale does not believe that the possibilities for chemical use of agricultural products have been exhausted!

"Two New Sales Opportunities" in CHEMICAL INDUSTRIES for July, p. 12, is on the right note!

George Peabody College H. A. WEBB
Nashville, Tenn. Professor of Chemistry

If He Were a Salesman

If I were a salesman probably I could write a glowing testimonial of CHEMICAL INDUSTRIES and the GUIDE-BOOK; but being a chemist I can only report that our laboratory reads your publication from cover to cover. It is impossible to state what we like best, but what probably is most helpful are the abstracts on new processes and products, patents, and prices. The GUIDE-BOOK is, of course, very helpful in digging up sources of supply.

Richmond, Ind. E. F. SCHEFFLER

Another Man's Opinion

My opinion is that your journal as a whole has improved markedly since this time last year.

Cleveland, Ohio A. STANLEY FOX
Burton Explosives Division of
American Cyanamid and Chemical Corp.

Questions of Ethics

There is a dirty back side to the pretty picture you paint of the grand and glorious service which an outside, disinterested consulting chemist can render a chemical process company. Just because they are outsiders they often do not see or understand the real inside problems, and their boasted disinterestedness seldom is so altruistic that it excludes their own self-interest.

A couple of years ago we had some experience with one of these wiseacres of chemistry. To earn his fat fee it was up to him to make some kind of recommendations, and he seemed to think that the easiest way of building up his own reputation was to tear down the reputations of the firm's regular staff. The result was an unholy mess. Within three short months he succeeded in shooting the morale and loyalty of our organization to ribbons, and he foisted upon the management a series of expensive and impractical changes in our operating practice. To cap the climax, when these suggestions of his did not work out, which was just what all the poor, near-sighted insiders prophesied would happen, he was clever enough to lay the blame for these failures upon them. Two good practical operating men and one good control chemist lost their jobs. Those of us who escaped the axe had to pitch in and clean up the mess and incidentally salvage the reputation of our distinguished, outside, disinterested consultant.

Lowell, Mass. P. S. HAAS

CHEMICAL INDUSTRIES

VOLUME XXXVII NUMBER 3

Befouling the Nest

WITHIN twenty-five miles of New York a recent survey reveals 179 firms and individuals jobbing soda ash and caustic soda. Of the old line established distributors who maintain spot stocks and delivery service, there are 28, half of whom are selling the alkalies made by two or more manufacturers. There are 12 brokers in the territory who sell in cars out of manufacturers' stocks, and no less than 78 less-than-carlot resellers, so-called sub-jobbers, with 45 laundry supply houses. In the territory there are 26 contract consuming customers, who range from manufacturers of fertilizers to makers of soap, who are reported to be reselling.

This local market is estimated not to exceed 800 cars of ash and 1000 cars of caustic a year; and remembering that no additional sales effort increases the consumption of these standard chemicals, the ridiculousness of such a marketing situation is self apparent. Anyone familiar with the distribution of industrial chemicals throughout this country must appreciate also that while the picture in New York is black, it is no darker, size considered, than in many other cities. Furthermore, what is true of alkali is true also of alcohol, trisodium phosphate, naval stores, insecticides, and a number of other important items.

The causes of this woeful overrepresentation are plain enough and the demoralization that results from slicing the local markets so thin is clearly understood. The cure is simple in theory, but difficult in practice. It can only be administered by the producers who must make up their minds to take their own medicine.

A very great help would be to enforce the clause in every sales contract that consumers buying for their own requirements are not to resell. If the established distributors were confined to one brand and if the sub-jobbers were reduced in number on some fair proportionate basis of the tonnage involved, the problem would be solved.

There are several big "ifs" here; but none so big, as that "if" the less-carlot market is not made profitable to the jobbers, the car-load market will not long be profitable to the manufacturers.

Conservation and Chemistry

Dr. Brooks' forecast of a serious curtailment of petroleum supplies within a decade is the result of careful study which has engaged his attention for some time, for his announcement at the recent A. C. S. meeting has been postponed nearly a year after he reached his conclusions. These have been sharply questioned, but anyone who knows his broad base of petroleum experience, his skill as a technologist in this field, and his scrupulous regard for facts, will do well to weigh the evidence anew pro and con.

But assuming his forecast is quite correct, it cannot rouse the excitement, following a similar prophecy a third of a century ago, that inspired President Theodore Roosevelt's campaign for the conservation of our natural resources. For this change the chemists themselves are largely responsible, and today even the man on the street, if he is not utterly indifferent, is quite confident that some synthetic fuel will replace a failing gasoline supply. It is not alone in the actual increase in the fuel wrung from crude oil by improved chemical technique or in the potential supplies from hydrogenation and other chemical processes that chemistry has lessened our dread of a gasoline famine. Repeated rumors are that improvements in lubricants make possible an internal combustion engine running at such high temperatures that it abolishes water cooling and operates at double present efficiencies. In itself this would more than double our petroleum reserves. At the same time it would wipe out the anti-freeze alcohol market and would make the economics of power alcohol something new and quite different.

Potash Prices

We agree with our good contemporary *The Chemical Trade Journal* (London) that potash should be the first of the basic chemical raw materials to move upwards in price upon anything like a substantial world recovery. That well informed publication estimates world production for the fertilizer year ending April 30, 1935, to have been about 2,000,000 metric tons, in terms of potassium oxide, an increase of 30 per cent. over the output of 1933. They credit the United States with third place in world trade with a production of 140,000 metric tons, following Germany with 1,250,000 and France with 350,000 metric tons.

The much talked about disparity between farm crops and farm supplies is fast disappearing in potash and nitrogen, and never before was the farmer buying so cheaply these essential raw materials. What is as important, we are independent of foreign sources.

Of the new potash producers, the Spaniards have plainly had the most influence upon world trade. Our own producers, far from seaboard and with no sulfate salts, are virtually out of the export field. For the present, at least, Russian production is absorbed domestically. The Spanish mines, however, are advantageously located geographically and being without a large home market naturally ship abroad. It is a curious anomaly that, with the intensive cultivation of agriculture throughout Europe, the chief advantages of the lower prices of fertilizers are being reaped by foreign farmers.

Teachers of Chemistry and Chemical Industry

Our modest suggestion that the job of selling chemical industry to teachers of chemistry remains yet to be done has stirred repercussions that suggest plainly that this is an important task, not easily accomplished and yet badly needed to be done.

From three professors of chemistry, from two company presidents, from one chief of research, and from two chemical plant managers we have had words of counsel written in confidence. Unanimously they indicate a lack of sympathy with and understanding of the business of making chemicals on the part of the chemical teaching profession. This is not surprising, but it is most disappointing to those who have observed the more wholesome respect of chemical executives for technical training and their growing confidence in scientific theory. If our teachers of chemistry regard the chemical manufacturer with apathy or suspicion or disdain, there can be no reapproachment between industry and science, and in this pragmatic epoch of chemistry they are certainly rendering themselves, their students and their profession a very bad service.

Our correspondents have not hesitated to make suggestions, the most practical of which are those that recognize that the community of interest between industry and science is too little understood alike by chemical maker and chemical teacher. The failure to see from each other's point of view arises not from lack of comprehension or from positive antagonism, but from ignorance of each other's problems and ideals. Here is indeed a first class problem in adult education! It might very well be made a project of the Institute of Chemical Engineers who would make a logical liaison between the American Chemical Society and the Manufacturing Chemists' Association.

The First of the Rosengartens

G. D. Rosengarten

IN the city of Philadelphia, in the year 1822, two ill-mated partners began to manufacture fine chemicals. Both were competent chemists; neither was a good business man. One was a Swiss, speaking only French, while the other was a German who spoke only his native language. Clearly the young firm of Seitler and Zeitler was predestined to disaster.

Within a very few months their difficulties multiplied and entangled into an impassé, and they were forced to call in an arbiter. Their choice of a man for this delicate position was as fortunate as all their previous agreements had been unhappy, for George D. Rosengarten, whom they selected, was ideally fitted for this task. He was a young Westphalian, speaking French and German as well as English, so that, besides being quite neutral, he was able at once to comprehend and to interpret the conflicting points of view of the two partners. Moreover, he was a son of bankers trained in banking, and accordingly not only understood the mechanics of accountancy, but also had a detached view of finances; both of which were woefully lacking in the equipment of Messrs. Seitler and Zeitler.

All details of the unravelling of this business tangle have unfortunately been lost; but we know that the solution was extremely agreeable to both the embattled partners and most fortunate for the future of the business. His very thorough investigation of the affairs of the firm convinced the young mediator that there was a future for the manufacture of fine chemicals, and he agreed to buy out first one and then the other of the original partners. Accordingly, the firm became Zeitler & Rosengarten, and the little factory on St. John Street was enlarged. The following year (1823) Charles Zeitler retired, and in 1825 George D. Rosengarten, now sole proprietor, moved over to a new building in Adelphi Alley, between Noble and Second Streets. In 1827 the business was moved to Arch Street, just west of Twelfth; in 1829 to the corner of Broad and Vine; and again in 1832 to Vine and Sixteenth Streets where it remained for more than twenty years. These rapid, successive removals were caused by the growth of the business, but in two instances profitable real estate transactions substantially strengthened the resources.

George D. Rosengarten was ever an aggressive manufacturer, and after 1823, when he came into complete control of the enterprise, the number and variety of chemicals produced was increased. During the first ten years of his operations he added quinine sulfate, sulfuric ether, spirits of nitre, ammonia water, acetic ether, and Hoffman's anodyne to the list of C. P. acids and alum originally manufactured. In 1832 the production of morphine salts was begun; the following year piperine was first made; in 1834 strychnine and mercurials; the next year veratain; and 1836 codeine, bismuth, silver salts, and the iodides of lead, iron, mercury and sulfur were added.

In 1840 Mr. Rosengarten took into partnership a young French chemist, N. F. H. Denis, a pupil of the renowned Robiniquet, who had been in his employ since 1835. For thirteen years the firm continued as Rosengarten & Denis, when the junior partner retired to return to France and enjoy the rewards which his technical skill and his partner's business acumen had earned for him. At this time, January 1854, two sons, Samuel G. and Mitchell Rosengarten, were admitted to partnership and the firm name changed to Rosengarten & Sons. The following year, the business was moved to

a new plant occupying the entire city block at Seventeenth and Fitzwater Streets, and in 1860 two other sons, Harry B. and Adolph G. Rosengarten became partners.

In 1879, after fifty-seven years of active leadership, George D. Rosengarten retired, and at this time his youngest son, Frank, was taken into the firm as a partner. Of the sons of the first of the Rosengartens, Adolph had been killed in a charge, which as senior major in command of the 15th Pennsylvania Cavalry he led at the battle of Murfreesborough, Tenn., December, 29, 1862, upon his twenty-fourth birthday; Mitchell Rosengarten died in 1898 at which time both Samuel and Frank retired. This left only Harry Bennet Rosengarten active in the business of which he became senior partner in association with two of his own sons, George D., named after his grandfather, the founder, and Adolph G., named after his soldier uncle killed in the Civil War. In 1901 the business was incorporated as Rosengarten & Sons, Inc., and in 1905 they bought the plants and business of their ancient and honorable competitor, Powers & Weightman, thus forming the consolidated corporation of Powers-Weightman-Rosengarten Co. In 1921 Harry B. Rosengarten died, the control of the now great manufacturing chemical house passing to his two sons and their younger brothers, Frederic and Joseph, who had in the meanwhile entered the business. In 1927 "P-W-R" consolidated with Merck & Company, and at this time the net assets of the Rosengarten interests (good will and all trade-marks being conveyed without payment) were appraised at over $5,000,000.

In a number of different ways the man who laid down the firm foundation under this great fine chemical manufacturing establishment was an unique figure among our pioneer chemical industrialists. These men were all of them rugged individualists, bold figures with deeply etched distinctive characteristics. George D. Rosengarten shared these distinguishing traits. He had all the tenacity and self-reliance characteristic of his chemical compatriots; but unlike the majority of them who, even when without the advantages of any schooling in chemistry, were practical makers of chemicals, he was in no sense of the word a 'plant man'. Most of our chemical pioneers learned the lessons of both operation and administration by practical experience; and as self-made men are so prone to do, they relied implicitly upon their own resources and trusted only their own hard-won, first-hand knowledge. He, however, was from the first allied with practical chemists upon whose technical knowledge he relied in the manufacturing end of his business. Moreover, he engaged in business on his own account after a training in banking which had given him, as it were, a second-hand knowledge of industrial and financial administration so that he was enabled to profit by the experience of other men.

Most important of all, however, was a fundamental difference of temperament that set Rosengarten apart

George D. Rosengarten as a young man, about the time he entered the chemical industry. From a portrait now in the possession of the family.

from his contemporaries. That sturdy egoism of theirs, so important to their success in the then unmapped fields of industrial chemistry, had the distinct disadvantage of inclining them to domineering habits of thought and action. He, on the other hand, was cooperative by nature, willing to delegate authority, eager to lead rather than to command. Accordingly, while most of our early chemical manufacturers by Herculean labors and often at great personal sacrifice achieved tremendous individual triumphs, they built up great enterprises that were essentially a "one man business"; but George D. Rosengarten created an organization for the production and distribution of fine chemicals. His point of view and his methods were distinctly those of the modern corporation executive. He was thus doubly a pioneer chemical industrialist.

Such a man would naturally be a good competitor, and a rather important by-product of the Rosengarten attitude towards business was the development of a fair and friendly spirit that, in marked distinction to the cut-throat methods of the early heavy chemical producers, characterized the competition between him and John Farr. This is all the more notable because both firms were located in Philadelphia and their products closely paralleled each other.

In those early days—to illustrate the neighborly cooperation that existed—both firms did a big business in quinine salts, and the purchase of cinchona bark, the raw material, was an important task, involving considerable investment and directly affecting important costs, to which both George Rosengarten and John

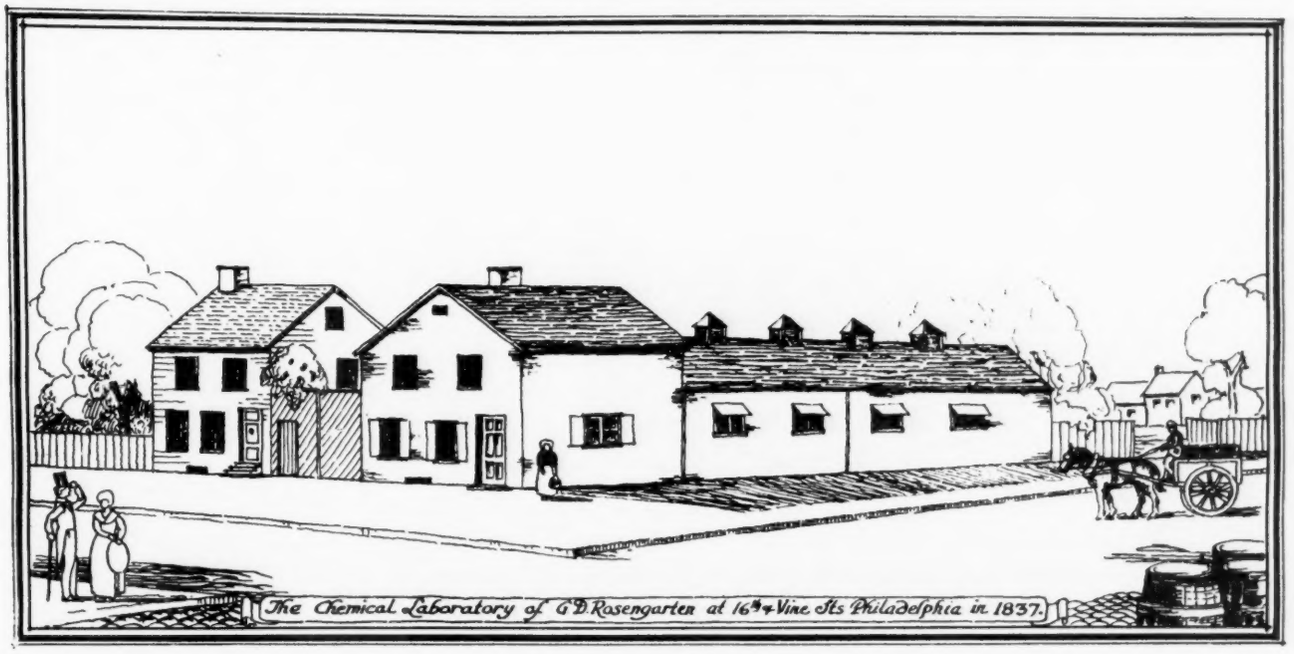
Farr gave their personal attention. This was long before the cinchona tree had been transplanted from the South American jungles to carefully cultivated plantations in the Dutch East Indies, and the wild bark from Peru was shipped to Baltimore as the most convenient American port of entry. Here the incoming stocks were graded and put into warehouses by commission merchants, and here the buyers came for their supplies. In order that two important purchasers might not come into the market at the same time, Rosengarten and Farr were accustomed every two or three months to go alternately to Baltimore. By stage coach, over rough and muddy roads, across ferries rowed by slaves, this was a four days' journey from Philadelphia, often five days in winter and sometimes in summer, if one were very fortunate, three days.

Upon one occasion, after George Rosengarten had started off on one of these periodical trips, John Farr received a letter on the fast packet from London telling him confidentially of a drastic break in the cinchona market. This was indeed important and quite unexpected news which he was perfectly certain his competitor did not know. Now, it would have been quite human of him to have kept this information to himself, to have allowed his rival to stock up in ignorance of the lower prices quoted in what was then the world market headquarters, to have himself purchased his next lot of this important raw material at a price that would give him a clear advantage in costs. Most competitors would have gleefully accepted this break of fortune and thanked their lucky stars. Not so, John Farr.

It was not possible for him to pick up a long distance telephone. He could not even send a telegram. He had to hire a special post chaise, arrange for relays of fresh horses, hurry home, pack his valise, and set forth himself on a long, bumpy, sleepless drive in order to warn his competitor. All that he did.

The man who could inspire such sincere friendship in a keen business rival must have been himself a good friend, and indeed the old city of Philadelphia has seldom had a more universally beloved and respected citizen than George D. Rosengarten. It has been said of him that "he was the worthy successor of Benjamin Franklin and Stephen Girard." He lived to but a single year short of ninety, having come to Philadelphia when he was eighteen, and throughout his long and active career he resided in that city. Though no politician, he was for many years a devoted servant of the city's public and charitable corporations. He was a director of a savings institution and of the Pennsylvania Railroad, and at the time of his death in 1890, the oldest member of the Franklin Institute, the German Society, and the Philadelphia Club, to which he was elected in 1844 when the club-house was situated at 255 Walnut Street.

George David Rosengarten was born in Cassel, Hessen, Germany, on June 30, 1801. He sprang from an ancient and influential family which for several generations had been bankers to the Electors. Always wealthy, the family had very greatly increased their fortune during the era of prosperity brought to Germany at the time of the American War of Independence; but their resources had been completely dissipated by the wars with Napoleon and by the unfortunate reign of his brother, Jerome, in Cassel, as King of Westphalia. The boy, having received a splendid education from the most competent teachers in Cassel, was forced by the political situation and the reduced circumstances of his family, to seek his fortune abroad. He went first to Holland, the home of his mother, for a year's apprenticeship in finance with the great banking house of Hope. Having completed this course, he decided to come to America, and armed with letters of introduction from Hope to leading merchants in Philadelphia, Baltimore, and New York, he landed



The Chemical Laboratory of G.D. Rosengarten at 16th & Vine Sts Philadelphia in 1837.

in Philadelphia in 1819. Immediately he found employment with a firm of wool merchants and shortly afterwards engaged in consulting work as an expert accountant. It was in this professional capacity that he was first brought in touch with the affairs of Seitler & Zeitler and so became interested in chemical manufacturing.

In 1826, on New Year's Eve, he married Elizabeth Bennet, a daughter of Jacob and Henrietta (Bacher) Bennet, born in Hamburg, November 11, 1809, who, when she was ten years old, had come to Philadelphia with her parents. Her mother, a native of Potsdam, was closely related to the Mendelssohn and Hertz families in Hamburg where her father's family had been established for several generations.

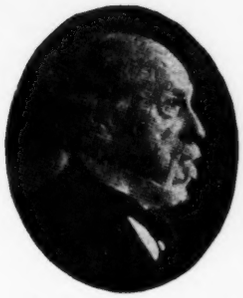
Mr. and Mrs. Rosengarten were a most companionable couple, sharing similar tastes in the arts, a deep enjoyment of good music, and a fondness for whist and bezique. These card games, especially as he grew older, were one of his chief means of relaxation. He was a most skillful whist player, and the opportunity "for a good game of whist" was one of the attractions that took him for many seasons to fashionable Saratoga Springs for his summer vacations. Mrs. Rosengarten was a charming hostess and a devoted mother to her large family. They lived together for fifty-nine years (she died at Newport, R. I., July 25, 1885), a complete and pretty picture of the gentleman of the old school and his beloved lady.

The Rosengartens had nine children, six sons and three daughters, all of whom, save a daughter who died when nine years old, they raised to man-and-womanhood. The care with which all of these sons and daughters were educated was conspicuous. Appreciating as George D. Rosengarten did the importance of technical training, those boys who later came into the chemical firm were all given the opportunity for a thorough schooling in chemistry. Five of them came into the business with him while the sixth entered the legal profession. The notable success in life achieved by all of these sons is not the least important tribute that may be paid to the founder of the Rosengarten dynasty.

Samuel G. Rosengarten, the eldest son, was born November 8, 1827, and after training in a private school, entered the University of Pennsylvania from which he was graduated with the degree of Bachelor of Arts in 1845, being at the time seventeen years old. To complete his chemical education he sailed on a clipper ship to study in the laboratory of the illustrious Baron von Liebig. Later he enrolled at the University of Paris under Professor Rose. He was living in the French capital during the Revolution of 1848 and not only witnessed the sacking of the Tuileries Palace, but went through the thrilling experience of being impressed into service as a soldier in the National Guard from which uncongenial duty he was promptly released on proving his American citizenship. He returned to Philadelphia on one of the first steamships to cross the Atlantic and immediately went to work in his father's chemical factory. In 1853, at the time the French chemist, Denis, retired from the firm, he was admitted into partnership. In 1898 he himself retired from active business and he died, unmarried, May 15, 1908.

The second son, Mitchell G. Rosengarten, who was taken into the firm at the same time as his older brother, and who died in 1898, at which time this same brother retired from the firm, was a thoroughly American-trained chemist. He attended James School, a private

The late Harry B. Rosengarten and his four sons. Left to right, Dr. George, Joseph G., Adolph, Frederic, and their father.


Samuel Rosengarten

Mitchell Rosengarten

Adolph G. Rosengarten

Harry B. Rosengarten

Frank H. Rosengarten

institution, at Eleventh and Market Streets, and graduated at nineteen from the Philadelphia College of Pharmacy. His brother's exciting experiences in Paris, thrilling enough to a young man, but most disturbing to his fond parents, suggested that this younger brother had best be kept at home, so his chemical education was completed by a course in the laboratory of Professors Martin Boye and James C. Booth, then located at the corner of Seventh and Market Streets. Professor Boye enjoyed the reputation of being at this time the foremost chemical teacher in the United States, and young Mitchell Rosengarten, on completing the lessons under him, went straight to his father's laboratories. He married, on August 11, 1868, a great granddaughter of the Irish patriot Samuel Neilson, Emily Huntsman, and they had six children, three of them sons, but none of them ever became identified with the family's chemical interests.

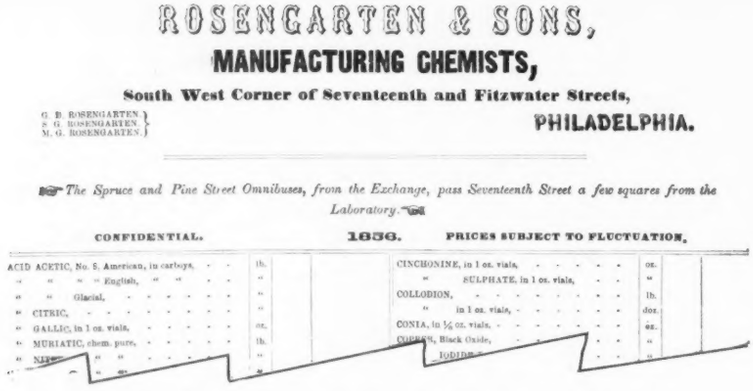
Adolph G. Rosengarten, the Civil War hero, was the fifth son and the seventh child of George D. Rosengarten, born December 9, 1838 and killed in action near Murfreesborough, Tenn., December 29, 1862. Until he was sixteen years old he studied in private schools in Philadelphia and was then sent to Germany to complete his chemical education. He was at once a brilliant student and keen sportsman, and on entering his father's business plunged into his work with characteristic vigor. At the same time, as in Germany he had taken long walking trips through the Hartz Mountains, the Black Forest, along the Rhine, over the Alps, and down into Lombardy, so in Philadelphia he was soon a leading spirit on the cricket field and in boating, swimming, and skating on the Schuylkill. Upon the outbreak of the war between the states all his energies were devoted to the Union cause, and he was one of the organizers of the famous "Anderson Troop," an exceptional body of picked men who rendered notable service in the campaigns in Kentucky and Tennessee under Generals Buell and Rosencrans. Young Rosengarten was mustered into service as orderly sergeant of this famous troop and in a year had been promoted to Senior Major of the regiment that had been added to the original troop. Early in December, 1862, this regiment, with many recruits, was ordered from Louisville to Nashville and thence proceeded to the front where on Christmas Day they were brigaded in a cavalry division led by General Stanley. In his report of the ensuing engagement, that officer wrote: "On the 29th the Anderson Cavalry behaved most gallantly, pushing a full charge upon the enemy for six miles; having dispersed the Rebel Cavalry, they fell upon two regiments of Rebel Infantry in ambush, and after a gallant struggle, were compelled to retire, with the loss of Major Rosengarten and six men killed."

The youngest son of George D. Rosengarten, Frank H. Rosengarten, was born in Philadelphia, May 6, 1843. As a boy he attended Faires Classical Institute, and during the Civil War served in the Landis' Battery. After the war he went to Germany where for two years he studied chemistry, returning to work for Rosengarten & Sons, being admitted to partnership in 1879. In 1923 he died. He married Mary D. Richardson, author of "Eight Journeys Abroad," and they had two sons, one of whom became a lawyer, the other a civil engineer.

Although the fourth son and sixth child of the first of the Rosengartens, Harry Bennet Rosengarten has been purposely kept till last because he was the real successor of George D. Rosengarten in the chemical business, and it is through his sons that the succession was carried on for the third generation until the business was consolidated with Merck & Company in 1927.

Harry Bennet Rosengarten was curiously enough the only son of George D. Rosengarten who did not receive a highly specialized training in chemistry. After a very thorough preliminary education in the small private school conducted by Dr. S. B. Wylie Crawford, he went, at his own suggestion, straight into the accounting department of his father's firm. In doing so he followed directly in his illustrious sire's footsteps, and like him, he carefully familiarized himself with every branch of all the business departments of the manufacturing chemical business. He was admitted as partner in 1860, and finally, in 1898, upon the death of one brother and the retirement of two others, became the senior partner in association with two of his own sons, George D., Jr., and Adolph G. When the business was incorporated in 1901 he became president, and he held this same office in the consolidated Powers-Weightman-Rosengarten Company, after the purchase of Powers & Weightman in 1905, until his death, February 19, 1921.

The sixty-eight years that cover Harry B. Rosengarten's active business career witnessed the great industrial expansion of this country and the rapid development of the sciences of pharmacy and chemistry. He led the company through two serious finan-



ROSENGARTEN & SONS,

MANUFACTURING CHEMISTS,

South West Corner of Seventeenth and Fitzwater Streets,

G. D. ROSENGARTEN. S. G. ROSENGARTEN. M. G. ROSENGARTEN.

PHILADELPHIA.

☞ *The Spruce and Pine Street Omnibuses, from the Exchange, pass Seventeenth Street a few squares from the Laboratory.* ☜

CONFIDENTIAL. 1856. PRICES SUBJECT TO FLUCTUATION.

ACID ACETIC, No. 8, American, in carboys,	lb.	CINCHONINE, in 1 oz. vials,	oz.
" " " English, " "	"	" SULPHATE, in 1 oz. vials,	"
" " Glacial,	"	COLLODION,	lb.
" CITRIC,	"	" in 1 oz. vials,	doz.
" GALLIC, in 1 oz. vials,	oz.	CONIA, in ¼ oz. vials,	oz.
" MURIATIC, chem. pure,	lb.	CUPRUM, Black Oxide,	"
" NITRIC, " "	"	" IODIDE	"

Above, a clipping from a price pamphlet of the company dated 1856. This pamphlet listed 175 or more chemicals. Right, a group of medals awarded Rosengarten & Sons during the period 1822 to 1904.

AMERICAN INSTITUTE
NEW YORK
EXHIBITION OF THE INDUSTRY OF ALL NATIONS NEW YORK 1853
AWARDED TO
INTERNATIONAL EXHIBITION
AWARDED BY THE UNITED STATES CENTENNIAL COMMISSION
PHILADELPHIA MDCCCLXXVI
AWARDED BY THE WORLDS INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION

cial panics and two wars that brought abnormal growth to its manufacturing facilities. Throughout these long years of great change he carried on the Rosengarten tradition in the spirit of his father, and he died, full of years and honors, the dean of the American chemical industry.

He had married Clara Johanna Knorr in 1868, and they had five sons and two daughters. Four of these sons—George D., Adolph G., Joseph G., and Frederic—comprised the third generation of the Rosengarten dynasty.

The oldest, George D. Rosengarten, named after the grandfather, was educated at the University of Pennsylvania and took a Ph.D. in chemistry at the University of Jena. He became a partner in Rosengarten & Sons in 1898, and when the firm was incorporated, became vice-president, continuing in this office in the consolidated Powers-Weightman-Rosengarten Company and retiring at the time of the merger with Merck. He has a distinguished record of public service, having served as president both of the American Chemical Society and the Institute of Chemical Engineers; a trustee of the Philadelphia College of Pharmacy and of the Franklin Institute, a member of the Revision Committee of the U. S. Pharmacopeia, and a director of the Philadelphia National Bank.

The second son, Adolph G. Rosengarten, was also graduated from the University of Pennsylvania. He entered the firm of Rosengarten & Sons in 1892 and became a partner in 1898. He was secretary and treasurer after incorporation and continued as treasurer after the consolidation with Powers & Weightman until 1921 when he succeeded his father as president. He retired at the time of the merger with Merck & Company. He saw active service in Porto Rico with the First Troop, Philadelphia City Cavalry, during the Spanish War, and was Chief of the Miscellaneous Chemicals Section, Chemical Division of the War Industries Board, during the World War. He is a director of two banks, two insurance companies, and of the Pennsylvania Salt Manufacturing Co., a trustee of the University of Pennsylvania and president of the Lankenau Hospital.

The two younger sons, Joseph G. and Frederic Rosengarten, are graduates of Princeton, and they both continued active in business after the consolidation with Merck & Company, Frederic becoming chairman of the board at the time of the merger. He, like his older brothers, serves on the boards of several notable public and charitable institutions, being a trustee of Franklin Institute and of the Wistar Institute of Anatomy and Biology, and the president of the board of the Chestnut Hill Hospital.

So concentrated a chronicle of genealogy and honors is needful to record within reasonable limits the distinguished record of this American chemical family. They stand foremost in age, in leadership within the field of chemical accomplishment, in the broader field of public service, among all of the family groups long and intimately identified with chemical industry in the United States. As they can be justly proud of the family tradition handed down by the first of the Rosengartens, he, too, might well take pride not only in the distinctions which his descendants have won in many fields, but also in the brilliant manner in which they have preserved the honorable ideals and chivalrous spirit of that tradition.

Coal-Tar Dye Exports

U. S. exports of coal-tar colors, dyes, stains and color lakes reached 9,274,500 lbs. valued at $3,164,685 during the first half of the year, compared with 10,270,600 lbs. valued at $2,905,600 for the same period in '34. American coal-tar dye exports enjoy wide distribution in world markets with China, Canada, Belgium, Mexico, Japan, and Brazil the outstanding outlets for such products. During June export shipments went forward to 49 foreign markets.

Paint and Varnish Become Chemical Coatings

By James O. Hasson

Head of Industrial Paint Division, Sherwin-Williams Co.

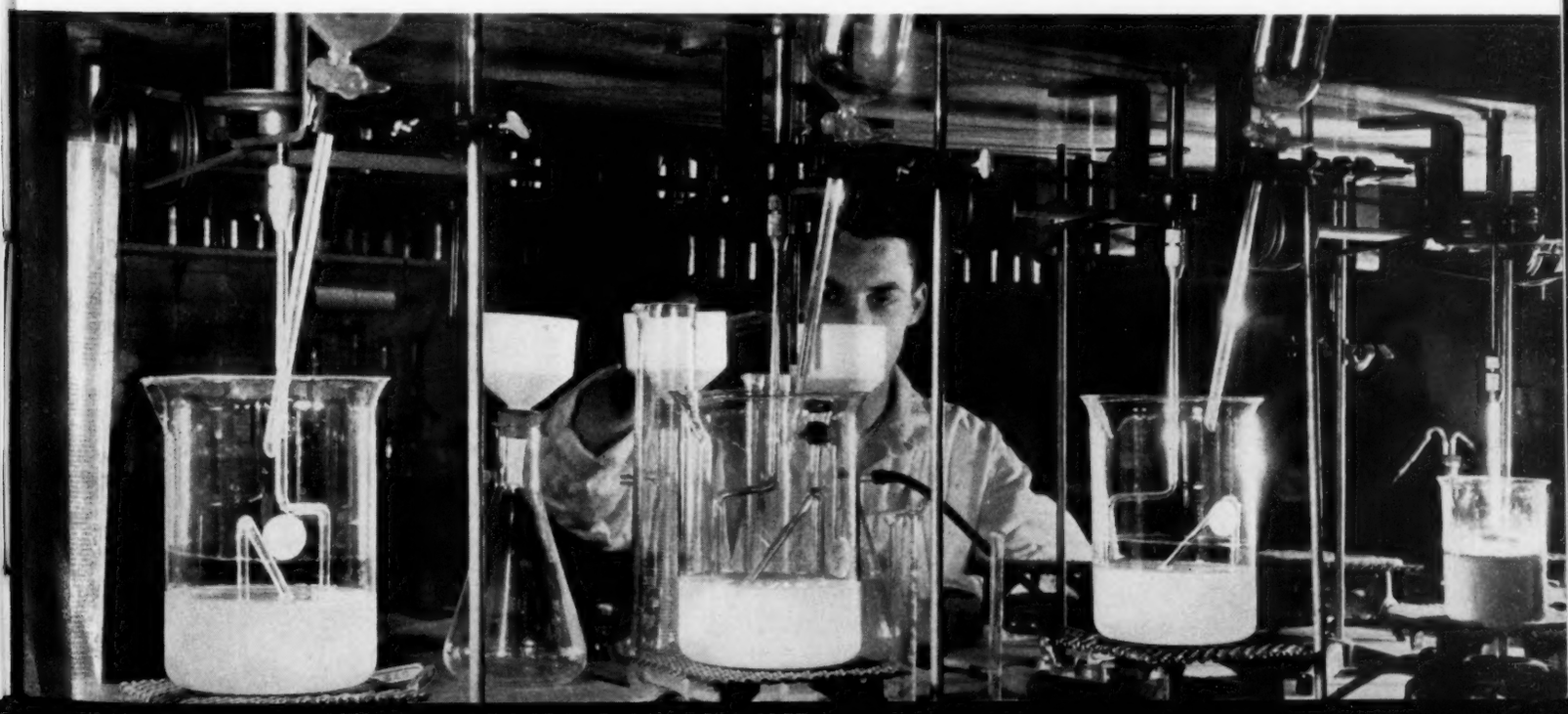
HALF a century ago, paint and varnish materials were mixed by the user with little or no knowledge of proper formulation beyond that gained in his trade experience. Few paint plants employed chemists, and few if any, understood the need for strict chemical control in maintaining the quality of the product turned out.

Canned or "patent" paint, as it was once called, began to make its appearance about 1875, but was usually an inferior product which often settled and hardened in the can. Research and chemical control over manufacture, in both of which the Sherwin-Williams Company did much pioneering, soon led, however, to highly successful and dependable products, many of which were sold ready-mixed or in such form that only the addition of linseed oil was required at first, but later, as the requirements for special purposes became better understood, a rapidly increasing variety of special-purpose paints and varnishes and enamels were developed and marketed.

Up to the time of the World War, nearly all of these finishes were based on oxidizing oils, mostly rather slow in drying, although many baking finishes, the drying of which was speeded by heat, were used on industrial products. There had also been developed new methods of application, spraying, dipping and flow-coating, which helped to speed the finishing process. The war brought many demands for special finishes and also a great expansion in plants devoted to making explosives.

At the end of the war these plants found themselves suddenly faced with the need for finding an outlet for

An interesting scene in the paint operation. In the laboratory, with the pigment mixers in front, where colors are matched and blended.



In this part of the process for the manufacture of high-grade varnish, the material in the course of production is run into what is called the cutting room, in which various other ingredients are "turned in on it."

products which they were capable of making to advantage and one of these products was nitro-cellulose. This form of cellulose had been used in making a finish by Alexander Parker in England as far back as 1855, but its application had been confined chiefly to coating polished metals which needed protection against tarnishing. These pyroxylin lacquers were expensive and provided only a very thin film, as the solid matter in the solution was small.

At length, the du Pont Company developed a pyroxylin which could be dissolved in much greater quantities. Better solvents also became available. Special plasticizers were provided and suitable gums and pigments were found suitable for the exterior finish of automobile bodies. These lacquers and others developed by other paint manufacturers provided an exceedingly durable finish which dried so rapidly that cars which formerly had required from two to four weeks to finish could be ready for service in one to three days. This meant great savings in the time and space and also offered light colors formerly not feasible in low-cost finishing. A great reduction was effected in drying equipment needed. The new finishing materials cost more than the old varnish types; but there was a net saving in cost and time which created insistent demands for lacquers for home and related uses that changed the complexion of much of the paint industry.

The brushing type lacquers for the home, however, required considerable skill in application. Their lower covering power as compared to the less expensive varnish enamel was also against them. The demand for rapid drying in a finish otherwise similar to, but more enduring than oil-base enamel, remained and was one factor which led to a second revolution in the paint industry, one still in progress though the initial stages are passed. That revolution was the development of synthetics.

The first synthetic resin used widely in this country was the resin glycerol ester or ester gum, having an ester of resin and glycerine. This has been known for many years and, because it has usually contained some resin derived from natural resin, is not considered a true synthetic by many. Since various glycols and other poly alcohols may be substituted for glycerol, there are many combinations possible, and the resulting products differ greatly in their properties. These ester gums have been a tremendously important development in the industry.

The first true synthetic came from Germany. Considerable progress has been made in the development of several types, essentially since the World War. Among these are the phenolic type, prepared from different phenols and aldehydes. These impart to finishes the highly desirable resistance to moisture and to the effects of certain chemicals. Of equal or greater importance was the development of the glycerol-phthalate type of resin which, besides imparting to the finishes properties similar to the phenolic resins, is not subject to certain faults of the latter, notably a tendency to darken in clear and light colors under light exposures. Certain of the glycerol phthalate resins also form their own vehicles so that the paint manufacturer need only add pigment to make them ready for use. In addition, most types, though slower than lacquers, dry for recoating in from two to six hours and are ready for use after overnight drying. Baking at moderate temperatures accelerates drying and may complete it within one to two hours. These may be suitably pigmented to afford a satisfactory finish on smooth metal often with but a single coat.

The para coumarone paraindene resins are produced from the distilled oils obtained in the conversion of bituminous coal to coke. Sulfuric acid is used to polymerize these resin products, and a pale, hard resin fast to light and air is produced. The well known solvent benzol is obtained from another fraction of the distillates obtained from the conversion of coal and is condensed to diphenyl and further treated with chlorine to form the arochlors.

Excellent resins are also being produced by condensing certain fractions of the distillates of petroleum. Amberol, which may be described as a modified phenol formaldehyde resin, combines hardness with the property of modifying tung oil to give a quick drying varnish. The vinylite resins produced from acetylene find

their widest application in abnormal corrosive conditions. They are also being introduced as an industrial finish for severe conditions.

Thus the synthetic resin has created many new types of fast drying and very enduring finishes, some of which have good brushing properties. Some synthetic types of enamel are displacing lacquers, as in a number of automobile finishes. In other cases the lacquers are being combined with the resins. The heavier coating obtained with the synthetics requires, as a rule, fewer coats.

Besides the synthetic resins, certain rubber-base products have become available (including chlorinated rubber) which have marked advantages for certain purposes. In mixing some of these with pigments the latter are given extraordinary dispersion in a very short time by working the plastic mass in a rubber mill. Numerous new synthetic drying oils and solvents are also being offered at present, as well as many other synthetic products having properties making each particularly well suited for special applications. These developments are taking place so rapidly that it is difficult for a paint chemist to keep abreast.

At the present time in the American paint industry at least 300 laboratories are dealing with the problem of paint and the improvement of the wide variety of products which enter into its manufacture. Many hundreds of chemists are engaged in this work, and their researches are constantly yielding new and improved ingredients as well as formulations which represent advances over the striking improvements of past decades. None of us, of course, can predict with certainty where these developments will lead. There is little doubt, however, that the advances of the next ten years will carry us as far or further than we have come during the past one or two generations.

It may be interesting to speculate, as Dr. H. A. Gardner has done in his recent address at the regional meeting of the American Society for Testing Materials in Philadelphia, about what the future may hold. As he is probably better acquainted with the "paint" research that is proceeding than anyone else, it may not be out of place to conclude this paper with a summary based largely upon his remarks:

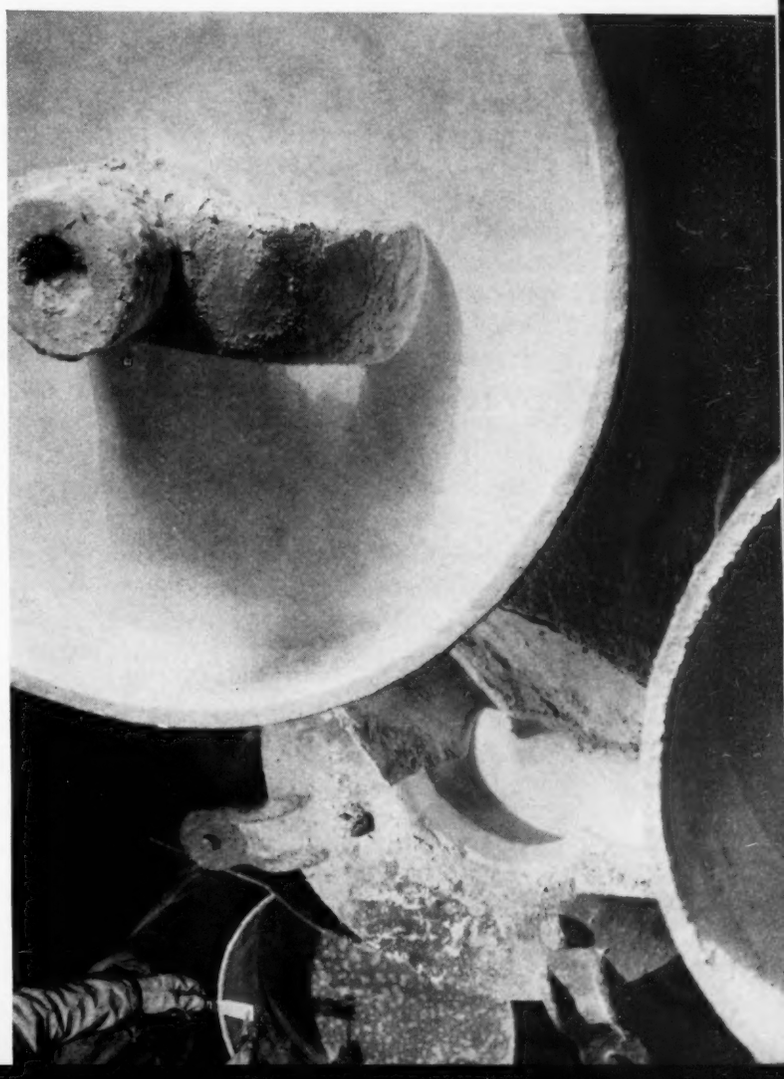
Coal may well be the source of future paint ingredients. It already is the source of phenolic and phthalic anhydride resins as well as of cresols, and the carbon in coal can be converted into alcohol which is the starting point for making formaldehyde. It is probable that many other oily and resinous materials will be produced from coal and will be employed in future paint making. Synthetic resins may or may not displace the natural type.

We may also expect to find petroleum become the source of drying oils. The chlorination and de-chlorination of hydrocarbons is now known to give quick-drying oils, and the use of acetylene compounds for making drying oils is also likely to make strides.

Air conditioning will doubtless give rise to many paint problems including those involved in the passage of moisture through paint films. Research reports indicate the possibility of films which have a valve-like action such as to permit moisture to pass in only one direction because of specially shaped particles. This should overcome "blistering" often caused by moisture seeking an escape through a film from its under side.

Doubtless the future will see house paints in which color is more nearly permanent than at present. Experiments looking toward the development of films which "case-harden" so as to retard fading and chalking are in progress. Isotopes of carbon black may be produced so as to give red, green or blue pigments instead of black. Profound changes in light absorption may be brought about through changes in the physical structure of paints. It is likely also that luminous pigments will see much wider use, especially if they become available at lower prices. They could certainly be used to advantage for road and other signs, providing, of course, that lasting qualities as well as price are satisfactory. Titanium, once a rare and expensive element, has now gained extensive use and similar results may well be brought about with other elements. Zirconium and

In another operation of the paint process, the pigments and white lead are dumped in these tanks, which are stirred, and go down through the successive steps where the worker is again trying to match color.



selenium are among those offering attractive possibilities. It is probable also that future paints will be made free from mildewing tendencies without bringing the undesirable results in other directions often encountered today in paints designed to prevent fungus growths.

Colorimetry will be better understood so that practical numerical specifications for color will be generally available. Gloss may also be capable of exact measurement in which event users can specify and secure the degree of gloss desired. Future householders may be educated to desire changes in the colors in and about their homes as styles change, and they will understand more about light reflection values and physiological color effects desirable for different rooms.

Paint Coatings and Building Materials

If steel is more extensively used in the future home, there will be little if any decrease in the quantity of paint required, though some of this may be applied at the steel mill where it can be baked on to increase its enduring qualities. The need for painting for upkeep as well as to maintain pleasing appearance and protection will continue, without doubt. If lumber continues in use, as seems likely, moisture-resisting coatings of cellulose compounds may well offer new possibilities. Such coats would make a good base for paints and reduce the chance of flaking and blistering. Mill-primed lumber has made some strides already but in the future the priming may be done with clear coatings which have the right degree of moisture and fire resistance, but would permit of better inspection, since the grain would show through.

Although the use of non-rusting steels increases, these are much more expensive than ordinary structural steel and are not likely to replace it. Where light alloys of aluminum and magnesium are employed, there is still need for protective coatings to prevent corrosion and embrittlement. It may well prove desirable to apply primers to metals while they are still hot as they come from the rolls. This, it is known, would tend to make the primer more nearly an integral part of the metal and increase its adherence, toughness, and abrasion resistance.

Better Plastered Surfaces

There is need for better plastered surfaces in building as well as for finishes that are not affected by the moisture conditions often prevailing in plaster. Attempts to use water as thinner in place of turpentine or mineral spirits have not been entirely satisfactory to date, but concentrated colloidal solutions may bring the desired results. Rubber latex, for example, can be concentrated to contain as much as 70 per cent. of rubber, the balance being water and stabilizing materials. Experiments have indicated that low-viscosity casein emulsions may become comparable with low-viscosity nitrocellulose in lacquer, but on the other hand there may be no great future for paints based on water emulsions, as high consistency is characteristic of the latter.

A gradual return to nitrocellulose in quick-drying coatings may come about since recent experiments show the possibilities of replacing organic solvents with certain types of aqueous dispersions which give much higher total solid content, thus overcoming one of the chief objections to lacquer. Such dispersions open new possibilities in their application to wet surfaces with the assurance of good adhesion. They also reduce inflammability and so increase safety. Emulsification with proteinaceous material and the use of some of the newly developed plasticizers may be helpful in this direction. Some of the newer types of cellulose compounds are likely to be used in quick-drying finishes. Mixed esters or ethers of cellulose may be used in this way to make finishes of wide usefulness. Solubility is high, and inexpensive non-toxic solvents can be used.

In varnish manufacture, the tendency will be toward a low-viscosity base, with binding material forming 80 to 90 per cent. and only 10 to 20 per cent. of volatile matter. Such varnishes should have quick-drying and good working properties. There seem to be possibilities of varnishes that dry in 15 to 20 minutes and still have excellent properties in other respects as well as good endurance. They would create a wider market.

Future Use of Low Cost Rubber

Low cost rubber may result in its use for many paints. Chlorinated and depolymerized rubber compounds, soluble in high concentrations, produce quick-drying coatings extremely resistant to alkalies and acids. Modified rubber products may yet be combined with resin and oil complexes with good results.

Sheets of clear cellulose products, such as Cellophane and cellulose acetate, may sometime be used for covering large surfaces with unusual decorative and protective effects. If such sheets were impregnated with rust-inhibitive compounds and toxic pigments, they might even be used for covering ship hulls with a smooth anti-fouling skin of good water resistance.

The use of low-pressure spray guns should extend the usefulness and efficiency of spray application of finishes. Metal cans containing paint under pressure and a valve to control flow have been used effectively without any separate gun and may gain wider use about the home. Felt and piled carpet are already being used for applying certain quick-drying floor finishes to advantage. Hog bristles may not always be required for making good brushes. Artificial silk may take their place.

These, of course, are only a few possibilities in the future of paint. The research worker never knows what boundless possibilities may be brought within view as his horizons and understanding of new materials broaden. Only those without imagination or those ignorant of the advances made in recent years can fail to see that the future holds endless possibilities for a large variety of better finishes in the years to come.

Fish and Animal Oils

as Chemical Raw Materials—Part I

A CENTURY ago great portions of the earth's acreage were devoted exclusively to raising cattle, sheep, and hogs. This was notably the case in our Western states, in Australia, Canada, and South America. Gradually, however, a profound change has occurred, a change which altered, among other things, the fundamentals of the oils and fats industry.

Crops have crowded in upon the animals. Millions of acres are now gashed by the chill of the plow that fifty years ago felt but the beat of the hoof. This trend, definite and pronounced in all countries, has been particularly accelerated in the United States by remarkable increases in population. Grazing lands have given way to the urgent demand for corn, wheat, and other grains.

The effect on the oils and fats of this agricultural evolution has been to promote the vegetable oils into a position of ever-increasing importance. This shift has been accomplished, not always, but nearly always, at the expense of the animal oils and fats.

As recently as 1880 much of our cattle and sheep were slaughtered for their hides and tallow. Meat was a by-product. Meat is now the main product, while the hides, the tallow, the fertilizer ingredients, the glue, and the gelatine have become the by-products. Modern methods of transportation and of refrigeration have made it possible to bring meat long distances to market. Cattle, hogs, and sheep have been for years carefully bred to develop types of animals that will bring the highest return in meat value, while the fats are simply incidental. One needs but compare the bacon type of hog with the lard type, or the modern "whiteface" with the Texas "longhorn" to appreciate the deep significance of this change. When the growth of the soap, margarine, and lard compounds industries began it was mainly to the vegetable oils that the producers turned. Cost dictated that they must employ cottonseed, coconut, palm-kernel, and other vegetable oils so the technician perfected the requisite processes, such as hydrogenation, which made their use commercially feasible. It would be distinctly erroneous, however, to deduct from these facts that the animal oils and fats are of but minor importance. They are the basis of an industry producing in normal times well over $100,000,000 worth of products annually.

Animal fats and oils economics are equally as complicated as those which govern the vegetable oils. While there are fewer important animal fats and oils to consider, there are nevertheless more numerous grades and an extremely complex marketing machinery.

The term "fats and oils" really makes a distinction without a difference. Alsberg and Taylor express this splendidly: "The distinction between a fat and an oil is purely an accidental one depending upon the environment in which the substance happens to be placed. If the substance is solid at ordinary temperatures, it is termed a fat; if fluid, an oil. This is merely a distinction of convenience, since all oils are solidified at lower temperatures and all fats melt at higher temperatures." Therefore, "fats" and "oils" can be, and are, used indiscriminately.

Academically the animal and fish oils are usually considered as one group: in commerce they are generally treated as two separate and distinct groups. The animal oils and fats are obtained from both land and water animals, contrasted to the vegetable oils which are, of course, entirely of botanical origin. If the animal fats and oils are derived from marine sources they are commercially considered in the fish group, the outstanding oils of this classification being the liver oils, chiefly from cod; blubber oils, such as whale and sperm; body oils from menhaden, sardine, salmon, etc. The hair-splitting debate whether a whale is a fish or an animal is simply ignored by the oils trades, and in defiance of biology, whale oil is a fish oil.

As with the vegetable oils, animal oils may be grouped into two main divisions: edible and inedible. Alsberg and Taylor point out, however, that the distinction between the two is purely one of taste since by modern methods nearly all fats can be refined or modified to the point of physiological edibility. The distinction is therefore based on such considerations as color, odor or taste, and origin. No amount of technical assurance of the edibility of a fat derived from garbage would

prove sufficient to overcome the natural prejudice that it is not fit to eat.

All animal fats and oils of terrestrial origin are by-products. This is a pertinent fact in fats and oils economics. The animal fats differ in this respect from those of vegetable origin, for while some of the latter are by-products, others are main or principal products.

We all talk glibly of lard, tallow and grease, yet if asked to define each, many would find it rather difficult to do so. Fats from the hog are called lard if edible, and grease if inedible. The part of the animal from which the lard is derived and the method of rendering are the governing factors in assigning the grades. The best is known as Neutral Lard No. 1, obtained from the leaf fat of the animal and finding its principal use in the oleo-margarine industry. In the rendering process, however, not all of the lard is recovered, but by cooking in digesters and employing higher pressures and temperatures the remainder is made available and is usually designated as Leaf Lard. Neutral Lard No. 2 is made in exactly the same way as Neutral Lard No. 1, except that the raw material is the back fat. The residue of Neutral No. 2 is known as Kettle-rendered Lard. Still a fifth grade, made from the trimmings, is designated in the trade as Prime Steam Lard because higher temperatures and pressures are employed than for the first four grades. The residue from Prime Steam Lard is classified as Grease.

Grades and Origin of Grease

Grease, really inedible lard, is produced, from packing house offal, from waste collected from butchers, hotels, etc., or from dead animals. It is commonly graded by color or origin, viz., white, yellow, brown; house, garbage, etc. White and yellow packing-house greases are usually of hog fat origin. Brown grease is usually derived from beef and mutton fat. Previous to the introduction of the rigid Federal Government inspection of the larger slaughter houses engaged in interstate commerce, much of that which is now sold as grease was sold for edible use. By law such greases must be denatured in one of several prescribed methods. In many European countries denatured white greases are at times treated to remove the denaturant and then sold as edible, a practice largely dependent upon the price of lard and not profitable except when lard is extremely high. Grease produced from the residue of butcher shops, hotels, restaurants, etc., is usually designated as "Garbage Grease" to denote its origin and to distinguish it from Packing House Grease which, as just noted, is largely, if not entirely, of hog origin. Grease derived from dead animals is generally called "Horse Oil".

Tallow is the fat from cattle and sheep. Again the source of the raw material determines the grade and to a great extent the use. Because of its characteristically strong odor sheep fat is rarely employed for food, but finds markets in the soap, candle, and lubricating industries. In contrast, beef fat is used for edible as well as inedible purposes. The finer grades are worked up into oleo stock and finally into Oleo No. 1 and Oleo No. 2 of commerce. The largest outlets for edible tallow are in margarine and lard compounds. Inedible tallow is processed by the same technique employed in the production of greases from lard, and it is also graded like grease by its color. The soap industry is the largest user of inedible tallow, taking, for example, in 1934, 662,858,000 pounds out of a total consumption of 717,368,000 pounds. The United States is by far the largest producer, the rest of the world combined producing only about 300,800,000 pounds.

Trading in inedible tallow was greatly facilitated with the introduction on June 26, 1935, of a futures market on the New York Produce Exchange. Previously, the only futures market in the fats and oils group was that in cottonseed oil, started as far back as 1904. "Futures" exchanges, first originated in the 1870's, perform very useful functions. They promote uniformity of customs and usages, and permit the consumer to "hedge" or to protect himself in purchases for future delivery. Since about 80 per cent. of the inedible tallow is bought by the soap industry, the futures market was of most direct benefit to that industry. The grade of trading contract is equivalent in specifications to New York extra tallow. This grade constitutes the bulk of the total inedible tallow sold. The contract calls for one tank car of 60,000 pounds of loose tallow entirely of animal fat, untreated and unbleached and of good merchantable quality. The contract for prime summer bleached cottonseed oil is likewise a tank car of 60,000 pounds. Prices in the case of both inedible tallow and cottonseed oil are quoted in 1-100th of a cent per pound, equivalent to six dollars a point per contract.

Consumption of Vegetable and Animal Oils

An interesting comparison of various volumes of the leading vegetable and animal fats and oils consumed in manufacture is possible. Taking as a "fair average sample" the statistics for the year, 1934, cottonseed oil leads by a very wide margin with a total of 1,377,437,000 pounds. Inedible tallow with a factory consumption of 717,368,000 pounds ranks second. Coconut oil takes third place with 589,602,000 pounds, followed by another vegetable oil, linseed, in fourth place with 258,483,000 pounds. Grease is fifth with 240,154,000 pounds. Sixth and seventh places are taken by palm and chinawood with 191,738,000 and 105,978,000 pounds respectively. Edible tallow follows along with 78,909,000 pounds and in ninth position is corn oil with 61,094,000 pounds. Tenth is sulfur oil, or olive oil foots, 30,738,000 pounds. Again the animal fats appear with edible animal stearin, 28,703,000 pounds and oleo oil, 26,137,000 pounds. It is then necessary to pass over palm-kernel (22,601,000), soybean (20,907,000), castor (20,188,000), perilla (16,108,000), and peanut (14,999,000), all vegetable oils, to reach lard, 14,260,-

000 pounds. These figures must, however, be taken only for what they claim to be, that is factory consumption. Production of oleo oil fluctuated between 122,527,000 and 164,780,000 pounds in the years 1914 and 1929; animal greases between 210,000,000 and 390,000,000 pounds; and inedible tallow between 227,000,000 and 426,000,000 pounds in the same period.

Production of lard is, of course, much larger than the figures given for factory consumption, since the greatest use is in the home and in restaurants for cooking purposes. We are a larger exporter of lard to northern European countries, where, due to the density of population and the lack of animal feedstuffs, hog raising on a scale anywhere near sufficient for their requirements is out of the question. Countries in the southern tier (largely the so-called Latin countries) evince on the other hand a decided preference in cooking for vegetable oils. Despite this cleavage on preference, our total exports of lard have been usually (up to 1930) close to our domestic consumption figures, as the following statistics indicate:

Lard (tons)

	Production	*Exports*	*Consumption*
1924	861,710	433,683	422,795
1925	656,447	315,928	348,808
1926	655,763	320,130	332,281
1927	675,444	313,259	360,057
1928	781,079	349,748	418,071
1929	782,834	378,420	404,414
1930	679,625	292,851	386,774
1931	693,758	258,160	435,598
1932	702,437	246,490	455,947
1933	793,228	260,791	531,437

Effects of the depression and the decline in international trade are quite apparent in these figures for the years following 1929. As a result of artificial trade barriers, lack of foreign exchange on the part of many of our formerly best customers, generally poor business conditions the world over, and the sudden price rise in lard in 1934 stimulated in the United States as a result of abnormal drought conditions which severely curtailed the corn crop, our customers abroad were forced to reduce their lard purchases to much smaller quantities. Until international trading relationships once again approach normal, little likelihood exists for a return to export tonnages approximating 350,000 to 400,000 tons annually.

Lard is waging a defensive and losing market war along a number of different fronts. The chief competitor is the so-called lard compounds which began to be used in a serious way as far back as 1870. At that time and for many years later they sold as adulterants of lard and consisted chiefly of tallow or beef stearin. Later, cottonseed oil was employed, and by 1890 most of the brands contained just sufficient lard to give the characteristic flavor. In 1908 the hydrogenation process was successfully introduced whereby an oil could be changed into a fat. These products, of which "Crisco" is one of the best known examples, are sold almost entirely under brand names. They may or may not contain animal fats depending upon the relative costs of cottonseed and other vegetable oils, but all are predominately cottonseed oil. For this reason a very definite relationship has come to exist between lard and cottonseed oil prices. Any tinkering with the economic structure which throws the two out of the normal relationship leads to serious consequences. Lard and lard compounds are continually in open competition. First one and then the other gains temporary advantage as the prices of corn, hogs, cottonseed, and the competitive vegetable oils shift. But there is never any truce. While existing consumption figures for lard are reasonably accurate, statistics for lard compound consumption are not; therefore, any comparison of consumption trends would possibly be misleading. Nevertheless, the hydrogenated compound manufacturers have obviously advanced their cause remarkably in the last two decades. By intelligent and consistent advertising they have turned what was a disadvantage (the lack of the characteristic lard taste) into a distinct selling point, namely, that their product is tasteless. They have stressed the fact that vegetable oils instead of animal oils are employed, which leaves the impression with the user that lard compounds are likely to be cleaner and purer. The U. S. Tariff Commission in 1930 issued figures which showed that lard compounds usually sell from two to three cents lower than lard and about the same amount higher than prime summer yellow cottonseed oil. Price and taste are the primary factors in the struggle.

The principal consuming industries of animal fats and oils, aside from lard for cooking purposes, are the soap, margarine, candle, and lubricating fields. Chief of these is soap making. Up to 1921 larger and larger quantities of tallow were consumed in the soap kettle. Tallow is by far the largest single fat or oil employed in soap manufacture, forming the basis for the manufacture of the slow-lathering soaps. In modern practice tallow is usually employed in conjunction with amounts of coconut oil and other oils of the coconut type which possess quick-lathering properties to give a product that is a cross, so to speak, between slow-lathering and quick-lathering soaps. Such a type describes the present hand and laundry soaps of the better grade. Since 1921 palm oil has to an appreciable extent taken up much of the natural increase that normally would have been shown by tallow. Soap makers are not in entire agreement as to the relative merits of tallow and palm oil. The color of palm oil restricts its use largely to colored soaps. Bleaching is technically feasible, but usually the price differential between palm oil and tallow does not warrant the added expense. For certain purposes, however, palm oil is definitely preferred. In the manufacture of laundry soaps palm oil and tallow are virtually interchangeable. The two then usually sell at or near a parity, at least

in the East, taking into consideration the usually higher refining costs for palm and the usually higher glycerine yields from tallow. However, the total consumption of tallow in the soap kettle is still greater than the consumption of palm oil, the figures for 1934, being 662,858,000 pounds to 154,704,000 pounds. In the same year 142,782,000 pounds of grease were consumed in the soap industry.

Possible future trends in the competition between tallow and palm oil are difficult to forecast. With tallow distinctly a by-product of meat production, any large increase in output would most certainly involve increases in our meat consumption while the best opinion is that since the turn of the century Americans have been eating less meat. Despite several natural drawbacks inherent to sections of the world from which palm oil supplies are drawn, the probabilities are that increase in palm oil production is more practical than to change a nation's diet. Some improvement in the type of cattle, so as to increase the yield of fat without sacrifice of the quality of the meat, might conceivably be introduced, but the effect could be but very gradual and, in the end, of rather dubious value.

Neatsfoot Oil in Industry

A word or two about neatsfoot oil is necessary. Neatsfoot oil is produced from a tallow of good grade, usually tallow obtained from the leg-bones and feet after the hoofs have been removed. After cooking, the fat is skimmed off again and treated in a steam-jacketed kettle. The resulting product, called neatsfoot stock, is separated into neatsfoot oil and stearin by pressing. Neatsfoot is sold in several grades, pure, No. 1, extra and cold-pressed, and is employed for softening leather, in waterproofing compounds and as a lubricant. Consumption in 1934 reached 5,093,000 pounds, not a large figure to be sure as oils go, but nevertheless highly important.

Oleomargarine vs. Butter

Introduction of oleomargarine came about 1870 at the time of the first production of lard compounds. As in the case of the early lard compounds, the first margarines were produced almost entirely from animal fats. In later years vegetable oils—particularly coconut, palm-kernel, peanut, cottonseed, and sesame—were used in greater and greater quantities. The animal fats employed are neutral lard, oleo stock (which abroad is called *premier jus*), oleostearin, and lard stearin. Formulas vary with different manufacturers, but the general procedure is to select a mix that will have a melting point between 26 and 27½ degrees Centigrade. Quite naturally the price of various possible ingredients at times determines formulas, for manufacturers alter them when necessary. But most of the volume consists of margarine made either from neutral lard or oleo oil and cottonseed oil, or from coconut and peanut or cottonseed oils.

The actual manufacturing operation is simple. The mixture is first melted, then cooled, and mixed with skim-milk to which a bacterial culture has been added. Agitation emulsifies the fat and the resulting product is chilled. In the competitive relationship between animal fats and vegetable oils the necessity for using larger admixtures of soft vegetable oils when animal fats are used than when coconut oil is employed is a factor. Vegetable oil margarines as a general rule are sold cheaper than animal margarines. Personal preference, too, is important; some showing a liking for one, while others are just as decided in their taste for the other.

Candle Making—an Old Industry

Candle making is one of our oldest industries. For centuries the raw materials were beeswax, spermaceti, or tallow. Early in the 19th century, however, the scarcity of beeswax and specially of spermaceti forced the makers into using stearin. Later, the solid fatty acids obtained from the saponification of fat were used. Tallow, grease, stearin, or mixtures of these can be resolved into glycerine and free fatty acids. The liquid and solid portions of the latter are separated. The liquid is the red oil of commerce (used in making textile soaps) and the solid is stearic acid. Paraffin is mixed with the stearic acid in modern candle making to overcome brittleness, and the candle maker prefers tallows and stearins to oils and greases because their content of solid fatty acids is much higher. He usually employs the titre test as a practical measure of the solid fatty acid content. The "titre" of a fat or oil is the temperature at which the mixture of fatty acids derived from it solidifies after it has been melted.

Oils' Place in Lubricants

Because most people know lubricants through the automobile in which the oils used are almost entirely mineral in nature, few appreciate the importance of tallows, greases, and vegetable oils in making "the wheels of industry" hum smoothly. While in the past twenty-five years lubricants derived from petroleum have been gradually displacing the animal fats and vegetable oils, the turn-over from one to the other has been by no means complete as yet, nor is it likely to occur for many years.

Cylinder oils are largely mixtures of fats with mineral oils. Quite naturally oils of the non-drying type are essential; others soon become sticky. Tallows, greases, and lard oil are all employed, either singly or in combination. Often mineral oil is added in large quantities. For marine engines, etc., rapeseed oil compounds are the rule. Motor oils may contain small quantities of lard oil, and the various commercial greases sold for car lubrication are mixtures of tallow or animal grease, vegetable oil and mineral oil. Cutting oils, employed in metal working are chiefly lard oil, and

the newer, so-called soluble oils, used in connection with high-speed tools, are mixtures of vegetable or animal oils, mineral oils, and alcohol. The problems of lubrication have been out of the hit-or-miss class and laid on the doorstep of the technician. · No longer can the subject be left to rule of thumb or guess-work when equipment costing staggering sums is involved.

Price Movements

Fats and oils prices rose sharply in the latter half of 1933; this movement in the United States and other consuming countries continued through 1934 and 1935, but it remains a question whether that recovery came rather from curtailment of the supply or as a result of a healthy increase in the consumption of legitimate industry?

Drought and Control

Unprecedented drought in 1934 and the Bankhead cotton control law in 1934 and 1935 caused a deficit of between 100,000 and 150,000 tons of cottonseed oil production. The drought of 1934 and the Federal Government's 1934 slaughter of hogs and cattle by the hundreds of thousands turned a former annual surplus of lard into a deficit of 200,000 to 300,000 tons. While much in the fats and oils situation was the result of natural, rather than man-made conditions, the abnormal situation has been aggravated and severely augmented by the handiwork of economic theorists here and abroad who have invented processing taxes, crop control, animal control, import and export licenses, etc., as substitutes for natural supply and demand. As a result of this abnormal condition the United States in the fall of 1934 became a large importer of cottonseed oil and tallow, which sounds like carrying coals to Newcastle.

The first effect of the passage of the processing taxes by the Federal Government in 1933 was to seriously curtail purchases of foreign oils. This condition continued until the surplus stocks disappeared and the realization of the impending shortage manifested itself in 1934. Then the utter necessity for large importations first broke the dam of the import duties, and in the latter part of 1934 and the beginning of 1935 through the wall of processing taxes. Just what disparity prevailed in the oils and fats industry in this country and abroad may be well gleaned from the fact that in the latter part of 1934 cottonseed oil in our markets was selling at more than two and one-half times the market price of oils of equal value abroad.

Position of Vegetable Oils

Ignoring the effect of such artificial barriers erected to influence production and importation and hence price, and endeavoring to appraise the relative future importance of the vegetable oils and the animal fats it would seem that the brightest prospects are for the vegetable oils. It is within the fields that they largely dominate, soap, lard compounds, salad oils or dressings, that the greatest future industrial growth seems likely. Expansion of the acreages devoted to production of the vegetable oils the world over is perfectly feasible. On the other hand, the expansion in the supply of animal fats seems more likely to be much slower. With the birth-rate dropping in practically all of the large meat consuming countries; with labor saving devices reducing the amount of heavy manual labor and the corresponding decline in the per capita consumption of fats and oils, an expansion in our meat production seems rather doubtful. Nevertheless, more efficient handling of our household and industrial wastes would raise the total fats produced from these sources. The amount of such fats now utterly wasted annually in this country, is very great, and when prices warrant greater recovery will be attempted, but not before. Unfortunately, the cost of collection and recovery is likely to continue high compared to the price of equally suitable vegetable oils. Any closer culling of the waste markets is, therefore, for some time likely to be doubtful. Yet in the past the introduction of rendering of wastes has been a fertile field for expansion of supplies of animal fats. Between the years 1914 and 1930 production of inedible tallow and animal greases increased 82 per cent., or from 447,000,000 pounds to 811,000,000 pounds, largely the result of the utilization of former waste. Indicative of this steady rise in the importance of the renderer are the figures which show that in 1914 the renderer's proportion of inedible tallow to the total production amounted to 17.1 per cent.; 30.6 per cent. in 1919, and 57.8 per cent. in 1927. But collection and rendering surely reaches an uneconomical point beyond which it does not pay to go except in such an emergency as a major war.

Industry's Bookshelf

Science and the Public Mind, by Benjamin C. Gruenberg, 209 pp. McGraw-Hill. $2.

A careful study of the importance of science in every-day life today, both from the material and mental points of view, with clear-cut recommendations as to the furtherance of adult scientific education in the United States.

Science: A New Outline, by J. W. N. Sulllivan 279 pp. Thos. Nelson & Sons, N. Y. $2.

A clear, accurate, easily readable description of the basic sciences written for the layman. One of the finest accomplishments of the kind between book covers.

Mechanics of Materials, by S. G. George and E. W. Rettger, 483 pages. McGraw-Hill, N. Y. $3.75.

A text-book distinguished by the great number of workaday problems bringing into practical experience the physical and mathematical theories involved in stress and strain, tension and compression torsion, etc. in the use and design of members.

Paint and Varnish Removers

By Ibert Mellan, M.Sc.

CONTRIBUTIONS to our knowledge of paint and varnish removers have discussed but briefly one or two organic solvents used to remove coatings of paint, varnish, and cellulose. The patent literature, however, records the larger part of what has been generally accomplished in this field. In the light of practical experience many of these patents make fantastic claims for their solvents and are, therefore, quite misleading to the uninitiate.

Briefly, paint and varnish removers are such chemicals or compounds which have the property of loosening and dissolving both new and old paint and varnish films. For convenience these substances can be divided into two main groups. The first can be called the alkaline group because it is composed of alkalies such as sodium hydroxide, potassium hydroxide, ammonium hydroxide, calcium hydroxide, barium hydroxide, etc. These substances are used either in solution or preferably in paste form. The paste is made by mixing the solution of alkali with saw-dust, starch, or chalk, etc.

Chemical Action of Removers

Members of this group remove paint and varnish films by means of the chemical action of the alkali which saponifies the oil or resin present in the film or coating. This chemical action causes the film to rise at the same time that it is softened and dissolved. The film in this condition is easily scraped off and washed away.

The second group owes its usefulness to volatile organic solvents which may or may not be in combination with high boiling solvents, oils, or waxes. When these ingredients are added they retard the evaporation of the volatile substances.

This group depends upon solvent action to remove paint and varnish. When substances belonging in this group are permitted to remain in contact with such films for a short time, the organic solvents penetrate the hardened film and then soften it by dissolving the oil, rosin, or resin, so that the film or coating may be scraped off.

The Following Tabulated Patents Are Those Classed Under the Alkaline Group

1,223,518; Posson—Sodium hydroxide 4 lbs., water 2 quarts, corn starch 2 ounces, sodium silicate 2 quarts.

1,230,668; Casmire—Soda lye 96 ozs., sal soda 1.7 ozs., and water 1 gal.

1,281,158; Haber—Paraffin 8 parts, alcohol 14 parts, water 20 parts, sal soda 30 parts, benzene 28 parts.

1,328,080; Ellis—Phenol, benzene or alcohol, glycerin, paraffin or ceresin wax with or without monochlorocresol, naphthenic acid, wood flour, magnesium oxide, calcium oxide, and o-anisidine.

1,330,387; Newman—Flour 5 lbs., copper sulfate 1 oz., melted glue 8 ozs., methyl alcohol 1 pint, and water to make a thin paste.

1,449,388; Ferrell—Starch 24 parts, sodium carbonate 3 parts, sodium chloride 6 parts, sodium hydroxide 7 ozs., water 4 gals.

1,474,984; Van Ness—Soap 75 parts, sodium carbonate 40 parts, ammonium hydroxide 40 parts, alcohol 75 parts, spirits of turpentine 40 parts, oil of cedar 1 part, oil of pine 1 part, camphor 1 part, and water 1000 parts.

1,495,547; Clark—Methyl acetone 20 parts, alcohol 20 parts, ammonium hydroxide [26° Bé] 10 parts, ammonium carbonate 10 parts, benzene 15 parts, xylene 10 parts, Celluloid 5 parts, soap 5 parts, and benzene 5 parts.

1,530,683; Mallard—Sodium hydroxide 16 parts, sodium carbonate 32 parts, oxalic acid 6 parts, borax 10 parts, mix with water and then add calcium carbide 4 parts, benzene 4 parts, and thicken with a starchy material.

1,553,485; Tennis—Alcohol 2 quarts, benzene 3.75 pints, sulfuric acid ¼ pint, paraffin ¼ oz., and soap 3 ozs.

1,570,957; Fluegel—Potassium hydroxide 1 lb., trisodium phosphate ½ lb., oxalic acid ½ lb., calcium hydroxide 1 lb., starch 3 ozs., and water 1 gal.

1,556,694; King and Warlick—A concentrated aqueous solution of sodium hydroxide with or without potassium permanganate is applied to paint then sprinkled with water.

1,577,824; Ishiyama—Water 1.125 gals., sodium hydroxide ½ lb., lye ½ lb., benzene 2 ozs., ammonium hydroxide [7%] 2½ ozs., and corn starch 4 ozs.

1,581,421; Beebe—Potassium hydroxide 8 ozs., glycerin 1½ ozs., clorox 1 oz., ammonium hydroxide 2 ozs., corn starch 3½ ozs., ethyl alcohol 16 ozs., anise oil 10 drops, sodium silicate 2½ ozs., and water 5 lbs.

1,581,413; Yoakam—Sodium hydroxide 89 parts, sodium carbonate 2 parts, ammonium chloride 2 parts, calcium carbide 1 part, starch 10 parts. Water is added before use.

1,584,231; Koory—Sodium hydroxide 12 parts, potassium hydroxide 4 parts, ammonium hydroxide 4 parts, ammonium

chloride 2 parts, alcohol 10 ozs., and enough water to make a gallon.

1,589,219; Piper—A pasty mixture is formed from hydrated magnesium sulfate, sal soda, corn starch, and calcium carbide, the latter added just before use.

1,614,929; Munyon—Potassium hydroxide 3 lbs., ammonium hydroxide 1 lb., corn starch ½ lb., ether ½ lb., water 3 quarts.

1,651,130; Jones—Equal parts by volume of liquid soap, alcohol, chloroform, ammonia water, turpentine and gasoline.

1,647,399; Ellis—Powdered alkali (caustic) 2 parts is mixed with starch 1 part. When ready for use add water.

1,744,463; Gravell—A mixture comprising cresylic acid and sodium hydroxide. The surface is then treated with phosphoric acid.

Can. 229,099 (1923); Scoles—Sodium hydroxide 80 parts, ammonium carbonate 8 parts, and corn starch 12 parts.

Can. 263,840 (1926); Seaborn, Kent and Ingall—Sodium hydroxide 85 lbs., calcium carbide 6 lbs., bran 20 lbs., and water 30 gallons.

Can. 269,704-5 (1927); Fluegel—Phosphoric acid ¼-2 lbs., sodium hydroxide ¼-2 lbs., oxalic acid 1 oz. to 2 lbs., hydrated lime ¼-2 lbs., starch ½-5 ozs., and water 1 gallon.

Brit. 207,238 (1922); Freegard—Sodium hydroxide 48 parts, calcium carbide 16 parts, sodium chloride 8 parts, and water 240 parts.

Brit. 263,661 (1926); Todd—Potash is combined with a binder such as corn-flour, or sodium silicate with a solvent such as methyl-, ethyl-, butyl-, amyl-alcohol, turpentine, ammonia and acetone.

Brit. 347,433 (1930); Lovelace—Soda soap 25 lbs., water 100 lbs., sodium silicate or glycerin 3 lbs., borax 5 lbs.

Fr. 699,514; Equal parts of tetra-chloroethane, a soft or hard soap, and an aqueous solution of crude sodium phenate.

The Following Patents Are Those Classed Under the Solvent Group

1,046,926; Wilson & Harris—Benzene, collodion, phenol, and candelilla wax.

1,049,466; Ellis—Benzene 40 parts, alcohol 35 parts, boric acid 3 parts, benzoic acid 4 parts, and ceresin 1 part.

1,049,467; Ellis—Benzene 45 parts, alcohol 50 parts, paraffin wax 2 parts, and palmitic acid 3 parts.

1,051,317; Ellis—Benzene 45 gals., acetone 35 gals., methyl alcohol 10 gals., turpentine 2 gals., epichlorhydrin 2 gals., Celluloid 15-20 lbs., and paraffin oil 3-7 gals.

1,051,318; Ellis—Solvent naphtha 40 parts, petroleum naphtha 10 parts, carbon tetrachloride 10-20 parts, allyl alcohol 30 parts, benzyl alcohol 10 parts, and paraffin wax 5 parts.

1,051,319; Ellis—Benzene 35 parts, butyl aldehyde 14 parts, benzaldehyde 20 parts, amyl acetate 10 parts, ceresin 10 parts and wood flour.

1,051,978; Alexander—Benzene 40 parts, acetone 20 parts, soap 6 parts, paraffin 4 parts, hydrogen peroxide 5 parts, linseed oil 20 parts, and methyl salicylate 5 parts.

1,066,261; Chamber—Phenol 4 gals., methyl alcohol 2 gals., turpentine 2 gals., benzene 82 gals., with the addition of paraffin wax, ceresin wax and an alcoholic solution of pyroxylin.

1,066,720; Ellis—A solution consisting of casein 7.5%, oxalic acid 2% and water 90.5% is mixed with a second solution consisting of benzene 20%, amyl acetate 40%, benzaldehyde 10%, and benzyl alcohol 30%.

1,074,305; Wilson—Phenol 32 parts, paraffin 6 parts, ceresin 4 parts, beeswax 6 parts, collodion solution 16 parts, diluted with acetone and alcohol.

1,045,785; Goldstein—Water 226 parts, hydrochloric acid (36%) 8 parts, sodium hydroxide 40 parts, Irish moss 8 parts, hydrogen peroxide (3%) 32 parts, sodium hypochlorite 1 part.

1,069,056; Ellis—Casein 5 ounces dissolved in 1 gallon of 0.1% hydrochloric acid is emulsified with an equal mixture of benzene and quasi allyl alcohol.

1,069,057; Ellis—Quasi allyl alcohol 40 parts, carbon tetrachloride 10 parts, ceresin wax 2 parts, peat wax 1 part.

1,113,791; Ellis—Phenol 35 parts, benzene 28 parts, acetone 30 parts, wood flour 12 parts, ceresin wax 4 parts, methylamine 10 parts, starch, and magnesium oxide.

1,113,639; Holman—Potassium hydroxide 10%, ammonium chloride 2-3%, potassium carbonate 1-2%, alcohol 5%, and water 78-84%.

1,160,394; Ellis—Phenol 20 gals., benzene 10 gals., alcohol 20 gals., wood flour 10 lbs., ceresin wax 5 lbs., sodium hydroxide 2-6%, to which may be added pine oil, magnesium oxide, turkey red oil.

1,177,938; Dunnington & Hill—Equal parts of sodium hydroxide, boric acid, and ammonium hydroxide are mixed together, then diatomaceous earth is added.

1,181,361; Wessel—Flax is boiled with water containing 20% sodium hydroxide and 5% alcohol.

1,204,851; Denegre—Ammonium hydroxide (26° Bé) 40 parts, benzene 40 parts, methyl alcohol 40 parts, and paraffin 8 parts.

1,219,559; Kelly & Reid—Sodium phosphate 18.27%, ammonium hydroxide (26° Bé) 8.7%, sodium hydroxide 9 parts, hydrogen peroxide 4.35%, flour 1%, starch 1%, and water 61.43%.

1,201,181; Hennich—Sodium hydroxide 24 ozs., paraffin 4 ozs., benzene 1 pint, acetone 1 pint, nitric acid 4 drams, and water 275 quarts.

1,079,698; H. A. Gardner—Polymerized linseed or china wood oil 10 parts, wax 10 parts, benzene 40 parts, acetone 20 parts, methyl alcohol 20 parts..

1,095,270; Ellis—Amyl alcohol 15 parts, kerosene 10 parts, pinocolin 20 parts, formic acid 5 parts, and wax.

1,100,177; Ellis—Alcohol 4 gals., terpineol 2 gals., carbon tetrachloride 4 gals., paraffin 2 lbs., oxalic acid 3 lbs.

1,102,330; Ellis—20% solution of gelatin, crude phenol 20 parts, benzene 12 parts, methyl alcohol 8 parts, ceresin wax 1 part.

1,140,449; Ellis—Benzene 15 gals., acetone 10 gals., paraffin wax 4 lbs., oleic acid 8 ounces, and ammonium hydroxide (26°) two quarts.

1,143,110; Ellis—Alcohol 25-40 parts, acetone or methyl acetone 25-30 parts, propionic acid 4-6 parts, ceresin wax .25-1 part with or without kerosene, or toluene, or carbon tetrachloride.

1,143,111; Ellis—Acetone 30 parts, benzene 25 parts, butyric acid 4 parts, and ceresin wax.

1,143,387; Hambrock—Copal 6 parts, tung oil polymerized 4 parts, wax 4 parts, copal oil 8 parts diluted with benzene or methyl alcohol.

1,156,119; Whigett—Dichlorohydrin 10 parts, dead oil 40 parts, and aluminum palmitate.

1,167,402; Wilson & Bacon—Benzene 64 parts, methyl acetone 46 parts, phosphoric acid 6 parts, palm wax or candelilla wax 2 parts.

1,167,640; Ellis—Alpha-anisidine 10 parts, benzyl alcohol 40 parts, ethyl alcohol 10 parts, montan wax 4 parts, paraffin wax 3 parts, and soap 3 parts.

1,169,787; Ellis—Benzyl alcohol 30 parts, benzyl acetate 25 parts, cresylic acid 5 parts, carbon tetrachloride 15 parts, solvent naphtha 40 parts, and paraffin 5 parts.

1,173,628; Wilson & Forrest—2.5 ounces paraffin, 2.5 ounces collodion, carbon tetrachloride 1 quart or acetone 1 quart, benzene 2 quarts.

1,274,430; McAdam—Cresol 1.5 gals., spermaceti 2 quarts, alcohol 4 gals., acetone 11.5 gals., Celluloid 9.5 lbs., camphor 1.5 lbs.

1,280,602; Wells—Chlorobenzene 1400 c.c., phenol 320 grams, carbon tetrachloride 200 c.c., and paraffin.

1,306,221; Ellis—A mixture of benzyl chloride, toluene, benzol chloride, benzotrichloride made by the chlorinating of toluene.

1,483,587; Main—A paste formed from alcohol, furfuryl alcohol and starch.

1,516,064; Schmidt—Oxalic acid 8 ozs., alcohol 1 gallon [the alcohol should be denatured alcohol].

1,615,089; Lang—Benzene 31.5 parts, methyl alcohol 31.5 parts, ethyl acetate 31.5 parts, paraffin 5 parts, and sodium hydroxide 0.5%.

1,613,560-1; Ellis—Methyl alcohol, benzene, toluene, xylene, solution of ceresin wax.

1,618,687; Ellis—Ethyl acetoacetate, methyl ketone, paraffin or another wax.

1,618,866; Ellis—Ethyl acetoacetate 90 parts, benzene 10 parts, paraffin 3-4 parts with or without pyroxylin 2-3 parts.

1,618,868; Ellis—Ethyl acetoacetate, wax and nitrocellulose.

1,657,323; Simon—An anhydrous emulsion of balata or chicle in solution with wool grease and a volatile organic solvent such as benzene, methyl acetone and denatured alcohol.

1,752,358; Winzer—Denatured alcohol 16 parts, spirits of turpentine 2 parts, benzene 2 parts, oil of wintergreen 1 part, and dye 0.1 part.

1,759,154; Ellis—A mixture of isopropyl alcohol and water with a small percentage of tertiary butyl alcohol is passed through cracking ozone, then benzene is added to precipitate water and finally wax is added.

1,739,744; Verderosa—Acetone 50 parts, benzene 33.3 parts, and ethylene glycol 16.6 parts.

Fr. 674,289 (1929); Meyer—A mixture of methyl acetoacetate, acetic acid, acetone and methyl alcohol. To this mixture may be added collodion or paraffin.

Fr. 719,266 (1931)—A chlorinated hydrocarbon is added to the ordinary paint remover.

Brit. 207,594 (1922); Ponter—A mixture of paraffin wax, acetone, carbon disulfide, benzene and methyl alcohol.

Brit. 282,549 (1926); Leash—A mixture of benzene, alcohol, coal tar oil, and wax such as beeswax or earth wax.

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Ind. Eng. Chem. *19*, 485-7 [1927].
Rev. Chim. Ind. *31*, 202-5 [1922].
Paint Manf. Assoc. of U. S. Circ. No. 171-7, Feb. 1923.
Oil Paint & Drug Rev. *69*, No. 88 (1920).
Farben Ztg, *31*, 2829-30 [1928].

Industry's Bookshelf

The New Deal and Foreign Trade, by Alonzo E. Taylor, 296 pp. Macmillan, N. Y. $3.00.

To disprove the recently suggested plan by which Secretary of Agriculture Wallace hopes to solve the problems confronting agriculture, the author surveys trade conditions the world over and concludes that the "planned middle course" is impractical. Debatable material, but the book is of real value to anyone interested in present world trade conditions.

Elements of Statistics, by Harold T. Davis and W. F. C. Nelson, 418 pp. The Principia Press, Inc., Bloomington, Ind.

Prosaically titled, this new textbook is far from ordinary. The text combines fundamental mathematics and statistical methods with profuse illustrations, and the student using this text may attack the subject from the simplest possible point of view.

Use of Fertilizers, by A. C. Barker, 204 pp. Oxford. $2.50.

Edited from the English point of view and based upon British experience, this thorough-going manual on fertilizers is a valuable addition to the literature. Starting with how plants feed and ending with a discussion of economics of fertilizer use, the book is a complete manual of its subject, concisely and clearly presented with a wealth of sound factual data.

The Liberal Tradition, by Lewis W. Douglas, 136 pp. D. Van Nostrand, N. Y. $1.50.

Mr. Douglas has rendered a signal public service in publishing in book form the four lectures for Godkin Foundation he delivered at Harvard last spring. Against his broad background of training and experience, he has set forth here his philosophy of "free economics for a free people" with facts too seldom considered, and reaches conclusions too seldom comprehended.

American Vegetable Shortening Industry, by G. M. Weber and C. L. Alsberg, 359 pp. Food Research Textile Institute, Stanford University, Cal. $3.50.

The history and economics of this distinctively American industry are set forth in what is a model book of its kind. Not only is the story of the shortening industry completely and interestingly told with great accuracy, but an appendix of facts and figures in the back completes the ably written historical and economic text.

Practical Design of Exhaust and Blower Systems, by E. W. Favalora, 269 pp. Edwin A. Scott Pub. Co., 48 W. 45th st., N. Y.

Don't let the formidable title scare you away. Favalora has written carefully for men who have had little technical training but who desire some knowledge of installation and operation of blower systems. Higher health standards will necessitate many such installations, and this little book will post you.

International Trade Principles and Practices, by Paul V. Horn, 714 pp. Prentice-Hall, N. Y.

Horn feels that world trade today presents a field of ever-widening opportunity to the young man, and he presents the broad field of international commerce in a rosy light, develops his subject romantically, but never loses touch with the practical importance of his subject. Of small interest to the business man or the industrial chemist, this book should help the educator casting about for a lively text on international economic relations.

World Finance 1914-1935, by Paul Einzig, 370 pp. Macmillan, N. Y. $3.00.

Treated with boldness and sureness for Einzig is firm in the belief that our present financial system is much too involved to be understood by application of pre-war financial principles. His history of finance, a story of inflation, stabilization, deflation, and reflation, proves all the more interesting for its positive presentation.

The Chemistry of Cement and Concrete, by F. M. Lea and C. H. Desch, 413 pp. Longmans Green, N. Y.

General survey for architects, chemists, or engineers who have to deal with these materials. The authors discuss cement testing, cement production (including recently developed blast furnace or slag cements), general properties as well as some little known properties of cements, and conclude with an ambitious survey of cement deterioration, its causes and its possible preventions. A fine book, very complete and satisfying.

Factory Organization and Administration, Fifth Edition, by Hugo Diemer, 402 pp. McGraw-Hill, N. Y.

Mr. Diemer has surveyed present manufacturing conditions, and rewritten his text to emphasize the need for control and planning in every division of the plant. This new edition proves even more valuable to the plant man than its predecessors.

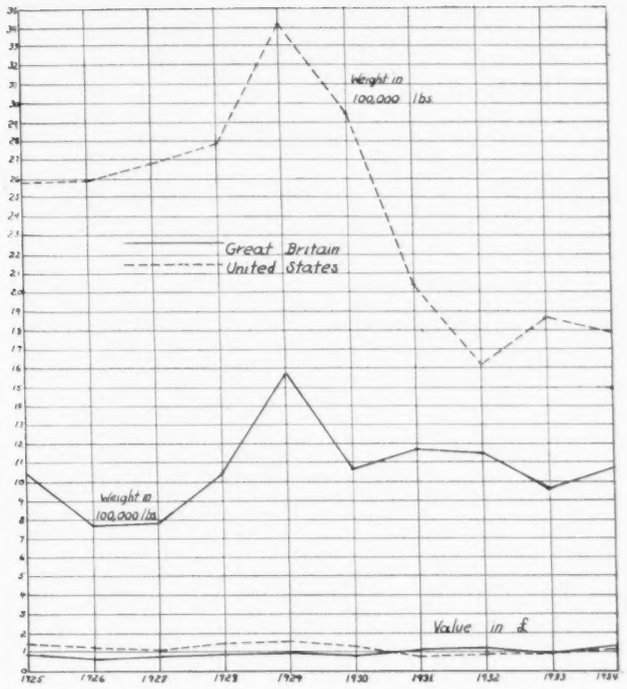
Dye Progress

in Great Britain and United States Surveyed

BRITISH dye users and dye manufacturers, in solemn conclave assembled, recently discussed the exact present status and probable future of British coal-tar dyes. Their survey reveals clearly that both British and American dye industries must solve strikingly similar problems.

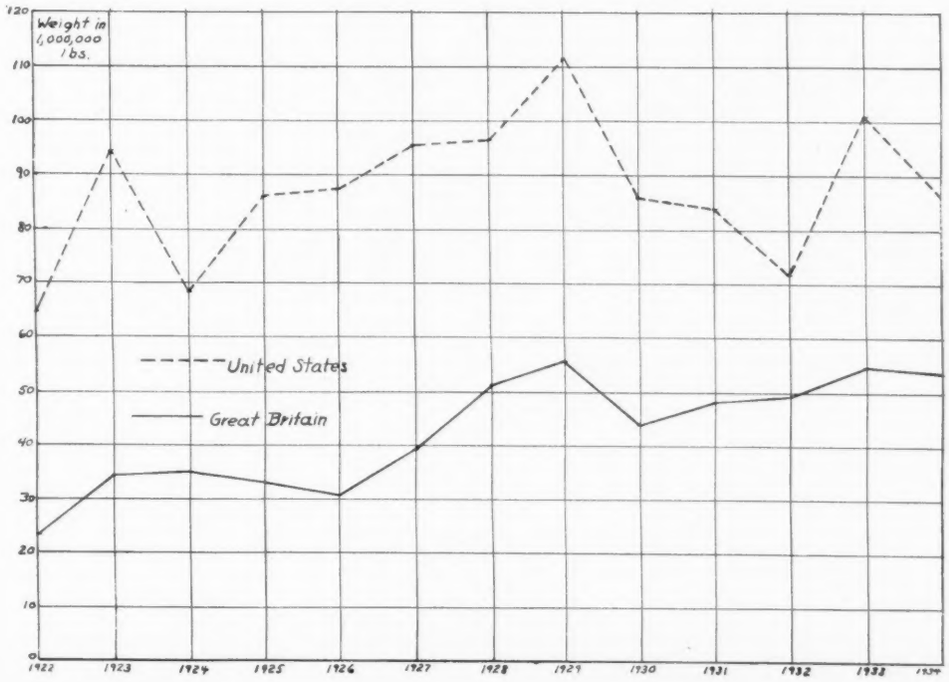
Today, the British dye maker's greatest problem is curtailed domestic consumption. The British textile industry, greatest domestic dyestuffs user, is rivalled in present weakness only by our own. The peak of British dye production, as well as American, came in 1929. Since the drop of that year, British production has steadily increased, interrupted last year by a slight check. American dyes, however, failed to gain from 1929 to 1932 when a sensational increase in production was enjoyed. But that rapid gain was half of it lost in '33-34. Britain's steadiness in its dye markets is conspicuous compared with our erratic fluctuations.

British dye makers have started a voluntary service to the color using industries in an effort to assist their hard-pressed textile trades. The British Color Council in the last three years has promoted excellent cooperation between dye makers and users. At this meeting, Sir Henry Sutcliffe Smith said, "A healthy and active British dyestuff industry should conduce to the benefit of the British textile industry." Technical knowledge in the possession of one manufacturer is now at least partially available to the entire industry.



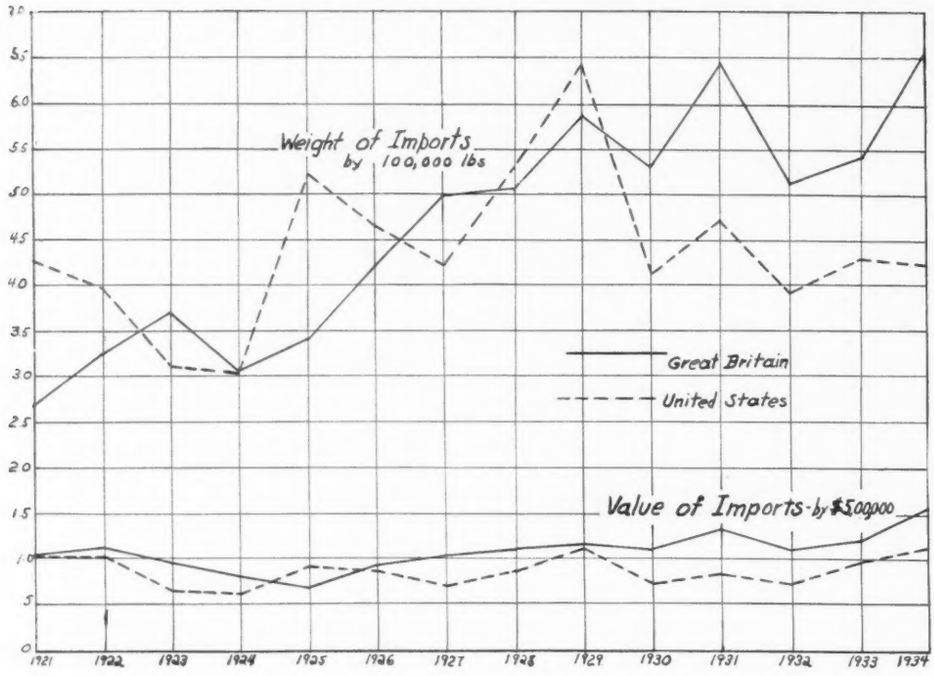
The British are making special efforts to satisfy their domestic consumers' entire needs. Constant research furthers this aim, and many new dyes constantly appear on the British market.

Dye exports of both countries are not entirely similar. With the export peak in '29 in each case, British export decline halted by the '33-34 gain, while American dye exports have fallen to half their '29 tonnage with as



Above—Comparison of British and American Dye Exports from 1925 through 1934

Below—Comparison of British and American Dye Production from 1922 through 1934



Comparison of British and American Dye Imports from 1921 through 1934.

yet no definite upturn in foreign sales. Americans are getting better prices for their dye exports, evidenced by the rise in dye exports value while tonnage prices fall. Doubtless this reflects the greater production of the cheaper dyes in Japan. British dye-makers feel that high prices for British dye explain their declining exports, and they blame their high prices on the prices of benzol, toluol, and xylol, important raw materials, which prices are influenced largely by the English demand for blended motor fuels. Representatives from British dye and motor fuel industries have met, and the British hope for some solution since both dye and textile interests are exceedingly anxious to place their dye industry on an equal footing with every dye industry in Europe, and benzol costs have been a constant stumbling block. The noticeable gain in British exports last year has been encouraging to them, coming as it did with another drop in American exportation.

Along with their serious attempt to satisfy all domestic needs, the British dye industry is carefully regulating dyestuff imports. The drop following the British import peak in '29 has been followed by little or no increase, due to the close regulation by the Dyestuffs Advisory Licensing Committee which acts with the Board of Trade when domestic consumers apply for permission to import foreign made wares. This resembles our own import regulation system. However,while U. S. dye imports for '33-34 have topped the '29 figure, so strong is the British domestic position that dye-makers recommend suspending the Safeguarding of Industries Act of 1921, its present refuge, in the belief that they are now fully capable of standing on their own feet by the sole aid of the 10% general *ad valorem* duty with exceptions to be granted in special cases of dumping by the Import Duties Advisory Committee. Imports may rise somewhat upon this lessening of protection and because of a possible pick-up of domestic textile trades. On the other hand, American dye imports have risen considerably since '32 and will probably continue to hold to the present level, a situation not completely in accord with U. S. production figures.

British dye-makers seem well justified in their confidence for the future. Their production continues to hold to recent gains while our production advances hastily, only to be followed by sudden drops. British exports are on the upswing, but never have they suffered the tremendous drops of our own. Our import situation is not as favorable to our dye industry as Britain's. Outstanding among all other considerations is the slow, steady recovery indicated by the British statistics. A marked increase in textile production in both countries would be of material aid, but it can certainly be said of the British that when this much-needed event takes place, they will be well prepared to take advantage of it.

Production Lithopone and Zinc Oxide

Lithopone producers report an annual production capacity of 232,000 tons. Imports of lead pigments are negligible. Exports of white lead increased from 1,048 tons in '33 to 1,561 tons in '34, and exports of red lead increased from 570 to 745 tons, while exports of litharge dropped from 1,538 to 972 tons.

Imports of zinc oxide declined from 2,541 tons in '33 to 1,268 tons in '34; imports of lithopone dropped from 5,596 tons to 3,927 tons, and of zinc sulfide from 27 to 12 tons. Imports of zinc chloride declined from 431 to 382 tons and imports of zinc sulfate dropped from 193 to 140 tons.

Exports of zinc oxide increased from 722 tons in 1933 to 1,155 tons in '34, the first increase since '29 when 17,638 tons were exported. Lithopone exports more than doubled in '34 and were 2,401 tons compared with 1,186 tons in '33. These figures furnished by the U. S. Bureau of Mines.

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CHEMICAL

The Photographic Record

Celebrating twenty-five years with Philadelphia Quartz—William Martin, vice president in charge of purchasing and traffic.

Above, George M. Dunning, sales impresario of Michigan Alkali, at the Houvenkopf course; and right, Charles Thompson, mid-west chemical distributor, as a farmer not on the relief rolls.

R. H. Dunham, right, Hercules' president, entertains a group of plant people from Parlin, N. J., at the Experimental Station outside of Wilmington, Del.

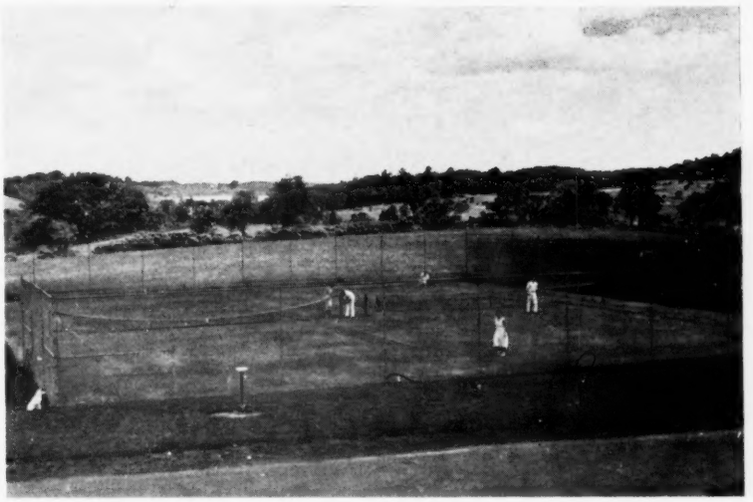
Arthur Phillips, president National Oil & Supply Company, vacationing at Lake George, N. Y.

In the Alaskan wilds on the trail of the Kadiak bear is R. R. M. Carpenter, du Pont vice president

NEWS REEL

of Our Chemical Activities

Two Broadway stars of the Solvay sales staff—Charlie Grossman and Dennie Peniston—on a fishing (for fish) trip off the Jersey shore. Below, the new tennis courts at the Hercules Country Club, where a great deal of chemical tennis is played.



Lammot du Pont, ardent alpinist, president E. I. du Pont de Nemours & Co., Inc., setting out to climb Mt. Rainier, Washington.

Forty-six feet long and christened the "Tenbees" after the ten members of the Bennett family, this trim Matthew Cabin Cruiser has carried Skipper E. W. Bennett (Dow vice president) and Mrs. Bennett on a vacation cruise among the Great Lakes.

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378 St. Paul St., West, MONTREAL

New Products and Processes

A Digest of the Current Literature for the User of Chemicals

Polymerized Tung Oil

Much of the recent work on tung oil has been directed to a study of its heat polymerization, both undiluted and also diluted with varying proportions of linseed oil or other diluents, with a view to the production of mixed stand oils and more particularly mixed linseed-tung stand oils. Fonrobert and his co-workers ("Farben. Zeit.," 1935, *40*, 477, 505, 533, 560, 586) have published the results of some interesting research, by means of thermal measurements, on the polymerization of tung oil, with and without admixture of linseed oil, which throw additional light on the complexity of the chemical reactions taking place. These reactions are exothermic and produce heat whereby the rate of reaction may be measured. This reaction rate varies with temperature and degree of dilution of the tung oil in the linseed-tung oil mixtures.

The apparatus used consisted essentially of a Jena beaker of 200 c.c. capacity, a small cylindrical immersion heater, a mechanical stirrer, two thermometers registering up to 360°, and a cylindrical cardboard container in which the beaker is stood on cork supports with a clearance of about 1 cm. all around. The beaker is filled with 170 g. of the oil or mixture under test and the thermometers and stirrer are so supported that one of the former has its bulb in the heater and the other is somewhat above the heater, while the stirrer is near the bottom and below the heater. This latter is supplied with an amperemeter and sliding resistance. Temperatures were read on both thermometers every 15 seconds. This arrangement served the purpose very well, although additional refinements might consist in better heat insulation, more exact electrical measurements, etc.

The first series of curves given by the author shows the temperature-time relation, the steep and rapid heating and the much more gradual cooling, and, what is of particular interest, the difference between the cooling of tung oil and of linseed oil and in the extent to which they both continue momentarily to increase in temperature after the current has been switched off.

This increase is much more marked with tung oil than with linseed oil and cannot be attributed merely to an after-jump by the thermometer. It is provisionally concluded from these preliminary tests with tung oil, and with linseed oil separately, that polymerization and gelling in tung oil continues, at least for a short time, even after the mass has become practically solid; also, that the thickening of the tung oil by polymerization is exothermic and produces heat.

The next series of curves show the heating rate (temperature increase per minute) and temperature curves, those for linseed oil being perfectly linear, while the tung oil are linear below 225-250°, but above that temperature the heating velocity increases instead of showing a uniform and continuous decline like linseed oil. These curves are given for tung oil and linseed oil separately and also for tung oil diluted with varying proportions of linseed oil, paraffin or salad oil. It is found that polymerization of a tung oil-linseed oil mixture is not mainly bi-molecular but largely mono-molecular; and the same applies when the tung oil is diluted with weakly-reacting diluent such as salad oil. In regard to the question whether the heat of reaction may be due to a stearic conversion of the α-elæostearic acid, the heat of polymerization being only of secondary importance, this suggestion is negatived for various reasons. Not only did Rossman, for example, find that the alpha acid is converted into the beta acid within a few minutes at 250°, but in the present work it was found that the evolution of heat increased with rising temperature even when, as in later experiments, the oil or oil mixture was heated twice up to 320°. Among the structural changes taking place in heat polymerization is the disappearance of the double bonds, and there is certainly much less energy set free and consequent heat production in a stearic change than in the elimination of the double bonds.

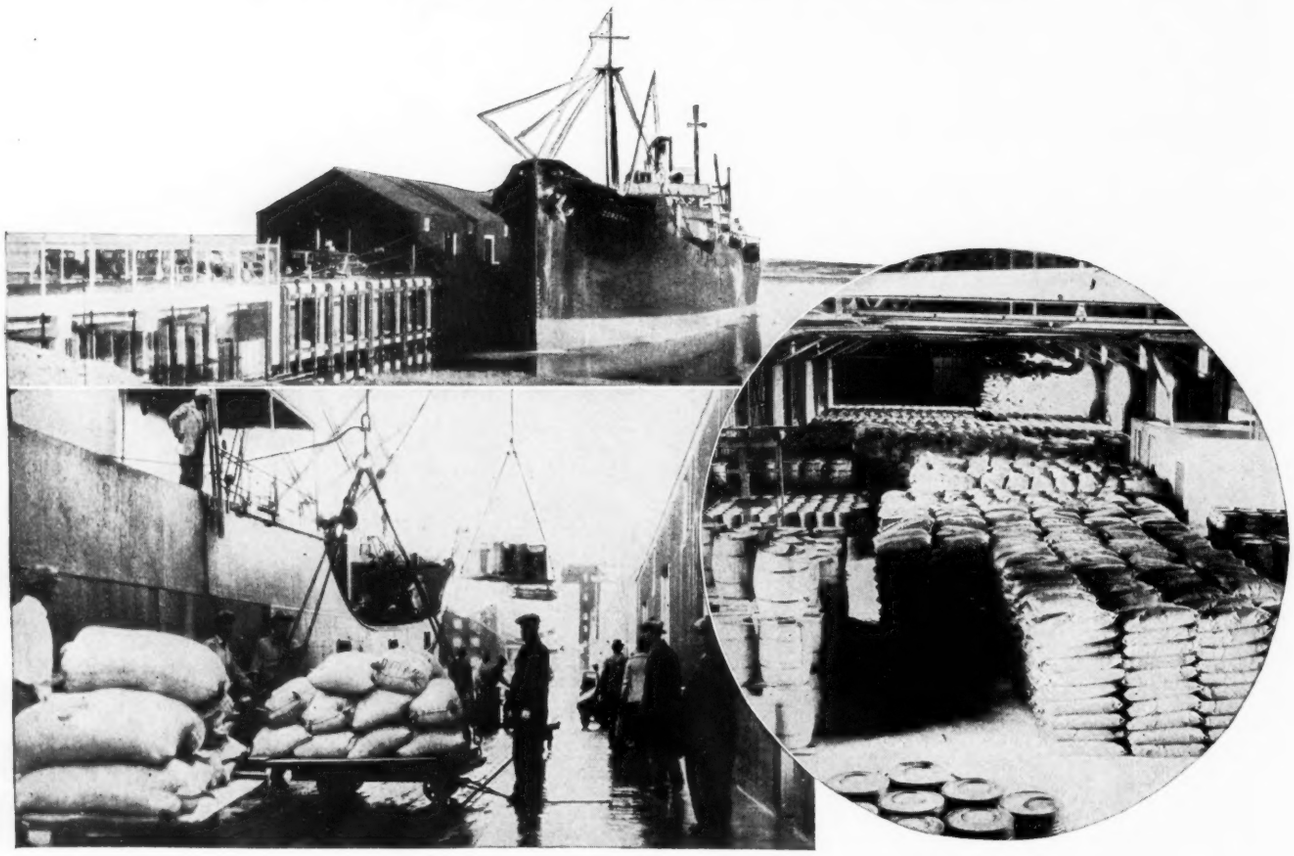
It may appear, of course, rather strange that such a marked increase in viscosity should take place in a mono-molecular reaction, and in explanation thereof it may be observed first that the reaction is not said to be wholly mono-molecular; there is a certain amount of bi-molecular action as well; and, secondly, inter-esterification also takes place. This is not thermally indicated so that the dicarboxyl and probably also the polycarboxyl acids may continue to form larger molecules by inter-esterification.

Since the production of heat is considered of fundamental significance in the whole process of thickening, it is further pointed out this thickening in stand oil manufacture depends for the most part on two closely-related reactions, those of polymerization and inter-esterification. In the first place two fatty acid radicles in the same glyceride combine through their double bonds, forming dicarboxyls, and then inter-esterification takes place with other glycerides, so that the dicarboxyls are now united with two glyceride radicles, thus naturally doubling the molecular weight. In this way not only tri- but polycarboxyls may be formed leading to still larger molecular complexes. These polymerizing and esterifying reactions are of considerable interest and importance, and show that the quality of a stand oil depends primarily on the temperature used. Wolff and Zeidler had previously found that a linseed stand oil obtained at 240° had an iodine value of about 120, but if prepared at 300° with the same viscosity it now had an iodine value of 160. With further heating and much greater viscosities differences in iodine values of 55 were obtained, the viscosities being the same. Wolff had attributed this to "association" (inter-esterification) which was accelerated to a greater extent at the higher temperatures than polymerization.

If tung oil is diluted with linseed oil it is found that when the mixture is heat polymerized the two oils do not individually and separately undergo the various changes which occur, but that the linseed oil takes part in the polymerization of the tung oil to a degree depending on the temperature and on a percentage of linseed oil present. This participation is the greater

The Pioneer Alkali Plant of the Southwest Celebrates its

1st ANNIVERSARY



After three years of planning and preparation the first alkali plant of the Southwest began production on scheduled time in September, 1934.

This September the plant celebrates its first anniversary, an anniversary free from the remembrance of delayed production, late shipments and strained customer relations so often incurred during the first year's operation of a new undertaking.

Placed in operation within the scheduled time, the Corpus Christi plant has proven to alkali consumers, located within its market zone, that the statements—prompt delivery, definite standards of quality, uniformity and purity—are not empty words but facts.

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the higher the temperature and the lower the tung oil content of the mixture. At low temperatures, however, the linseed oil has a retarding effect on the polymerization of the tung oil. It is further found that the extent of the linseed oil share in the reaction is increased by the presence of oxygen.

Two further points remain, namely, the optimum percentage of tung oil in the linseed-tung oil mixture, and the temperature range. In regard to the first, the results of the present work show that the proportion of tung oil should not exceed 25 per cent., as this is the figure usually adopted in practice. It is important to note, however, that the polymerized product is not linseed stand oil nor tung stand oil, but a mixed polymerizate with characteristic properties of its own differing from those of the individual stand oils. In this connection it is suggested that new types of stand oil could probably be obtained by heating linseed oil rapidly to 300-310°, then with vigorous stirring, spraying in tung oil at that temperature, and further heating to the desired consistency. Alternatively, a linseed-tung oil mixture could be heated to about 150° with addition of about 0.05 per cent. lime till maximum inter-esterification had taken place, and then rapidly heating up to 300-310°. It is obvious that by heating up varying mixtures of linseed oil and tung oil, or tung oil with other diluents, under varying conditions, a wide field of research is opened up; and this field is now being thoroughly explored by many workers in the paint and allied industries.

The temperature range is a matter of primary importance. The fact that higher temperatures are required in order that linseed oil may take an appreciable part in the polymerization of tung oil is strong evidence in support of the contention that the quality of tung oil stand oil is markedly affected if the temperature exceeds 270°. In the absence of air the participation of linseed oil in the reaction is not appreciable until a temperature of 275° has been reached. Both the present work and that of previous investigators shows that the critical temperature range for tung oil polymerization is 270-280°, and the same applies to mixtures of tung oil and linseed oil.—*The Chemical Age*, Aug. 3, 1935.

Coatings

A non-contaminating, corrosion-resisting coating for plating racks, applied by dipping, is announced by Hanson-VanWinkle-Munning Co., Matawan, N. J. "Kote-Rax" covers the rack with a tough, rubber-like film possessing high dielectric resistance and capable of withstanding considerable mechanical abuse.

Chlorinated Rubber Paint

A paint process with far reaching consequences is announced by the Harrington Paint Co., 1630 Collamer Ave., East Cleveland, O. By this process it is possible to transform and convert any rust or metal surface into a light-proof color body of highest weather-alkali-acid resistance.

Application Sprayed Metal to Ceramics, etc.

The enameling industry will be interested in a patent granted I. V. Brumbaugh, St. Louis, Mo., dealing with the application of sprayed metal, etc., in connection with ceramic and vitreous materials. *The American Enameler*, July-August, '35, p. 6, gives process in detail, and states that it is also applicable to objects of clay, china, porcelain, etc.

Stretchable Lacquer Finish

A "stretchable" lacquer finish, claimed to rival the flexibility and distensibility of rubber itself, is noted in *The Rubber Age*, August, '35, p248. Roxalin Flexible Lacquer Co., Elizabeth, N. J., are the producers. Tests conducted on this new lacquer showed that when applied on a piece of live rubber, and both stretched to the limit, the finish remained intact.

Shellac for Ornamental and Protective Coatings

Seeking new uses for shellac the Indian Lac Research Institute announces that its use on protective and ornamental castings appears to be an interesting possibility, according to a report from Trade Commissioner G. C. Howard, Calcutta, made public by the Commerce Dept.'s Chemical Division. By adding a small quantity of certain chemicals it has been discovered that a shellaced surface attains in a few days or weeks that hardness and weather resistance which hitherto took several decades to develop. The process is not yet out of the experimental stage, but it has aroused considerable interest, particularly in Germany, where shellac chemists are said to be making efforts to put the process on a commercial basis.

New Water-Soluble Resin

Glyco Products have started production on a new water-soluble resin "Abopon," an odorless water-white liquid resin not soluble in any liquid except water. Forms films within a few minutes on drying in the air, and dries to a smooth, non-tacky, flexible, glossy film. Numerous advantages are claimed for it, and its indicated uses are in the glass, metal, paper, leather, and textile industries.

Textiles

Experimentation designed to introduce methods of production of cellulose from hemp fiber is being carried on at Danville, Ill. Methods of curing, retting, and separating cellulose from hurds are being studied in an effort to utilize this inexpensive raw material.

Dyeing Viscose before Spinning

The obvious technical advantages in coloring viscose prior to spinning which have not yet been realized are the subject of British Patent 427,134, issued to Courtauld's, Ltd., and described in detail in *Silk & Rayon*, August '35, p. 443. Text relates to the production of colored filaments by adding a leuco vat coloring to the viscose which is then mixed, filtered, ripened, evacuated, and spun. Vat coloring may be of the indigoid, sulfur, or indanthrene type.

Month's New Dyes

Releases from General Dyestuff include Fastusol Brown LGA, a yellowish brown of considerable value for the dyeing of cotton and rayon. Fastusol Violet BBA dyes on cotton and rayon bright shades of a bluish violet. It has good affinity for pure silk from a neutral or acid bath producing a shade much redder than on vegetable fibres. Leaves acetate silk clear. Indo Carbon IB Suprafix, particularly suited for the printing of cotton or rayon, is preferably printed according to the Soda-Ash-Rongalite-Glucose method. Yields fine and deep shades of black of a bluish cast. Fastusol Red L 5 B, a direct color of superior fastness to light, also suitable for cotton-rayon mixtures; acetate silk is left white.

Also being marketed by General Dyestuff for General Aniline is Indanthren Brilliant Green 4 G Extra Paste Fine, which may be used either in dyeing or printing and produces bright yellowish greens of good fastness to light, washing, and chlorine.

Carbic Color & Chemical, agents for Durand & Huguenin, announce the following: Indigosol Blue IBC, recommended for padding or dyeing plain shades on cotton or rayon where the highest degree of fastness is required. Clear shades of blue of superior fastness are obtained. Indigosol Yellow V gives clear, greenish yellow shades and should be of value as a self shade and for the production of bright greens in combination with Indigosol Green IBA.

Dyestuffs Division of du Pont lists the following additions: Pontamine Fast Orange 6R which yields reddish shades of

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orange on cotton and rayon. Chief use is as a speck dye. Sulfogene Brilliant Blue 5G, a green, bright type which because of its brilliance will be used chiefly as a self color. "Acele" Orange 3R Powder and Acele Red CR Powder for application to acetate fiber yarns and piece-goods, the former yielding bright reddish shades of orange and the latter, medium shades of red. Sulfogene Carbon 2BCF Grains (Patent Applied For) produces bluish shades of black on cotton and rayon. Because of its physical form, it is stable and can be stored for a reasonable time without deterioration. Should find extensive use on all types of inexpensive cotton goods.

Waterproofing Fabrics

The successful waterproofing of any kind of fabric is assured through the use of Neva-Wet. This chemical process when applied renders the fabric water-repellent, moisture-proof, perspiration-proof; and in the case of woolen fabrics moth-proof. Process, described in *Rayon & Melliand Textile Monthly*, Aug. '35, p. 24 (424), is claimed not to affect the hand, feel or finish of any fabric it is used on and does not close the pores even on very sheer fabrics. It is also said to be permanent and to stand laundering and cleaning if the easily carried out instructions are followed.

Stripping Agents

Carefully culled data are compiled in "Stripping," by James F. Holmes, *Textile Colorist*, p553. Introduction deals with the difficulties encountered during the stripping process and cautions against the haphazard use of stripping agents. Contending that the choice of the most effective agents depends upon two considerations: first, the type of fiber, and second, the kind of dyestuff which has been used; the author launches into a lengthy discussion of the various stripping agents and processes as applied to various fabrics.

Chemical Specialties

An amorphous wax with high melting point is being offered by S. Schwabacher & Co., 25 Beaver St., New York City. Product is practically free from oil and moisture, tough, and of controlled uniform quality. Texture is very pliable; it does not crack as crystalline wax would fracture when cut, this latter feature making it valuable for various purposes.

Sheet Impervious to Grease and Oils

Linol, a new sheet which is impervious to grease and oils, is announced by General Products Corp., Minneapolis, Minn. This product was designed primarily for use where a liner or wrapper is needed for non-edible products of a greasy or oily nature. It is especially suitable for use in manufacturing fibre containers for lubricating oils and greases, or bags which are to contain oily commodities.

Resin-Impregnated Wood

Temp-urd Wood, a synthetic resin of the phenol and formaldehyde condensation type, when introduced or impregnated into wood, greatly improves several of the characteristics of wood. Being marketed by The Pyratone Process Corp., Chicago, Ill.

Water-Softening Compound

Hungerford & Terry, Inc., are marketing a new high exchange zeolite for water softening possessing some remarkable properties. Hi-Inversand, described in *Rayon & Melliand Textile Monthly*, August '35, 66 (462), possesses those particular characteristics which make it advantageous in open type gravity softeners.

Frosting and Etching Compound

A compound has been developed by B. F. Drakenfeld & Co., New York City, for frosting and etching bottles, glassware, etc. Comes in liquid form ready to use, and may be stored and used in wooden tanks lined with sheet metal. "Jack Frost" is chemically uniform and will not deteriorate.

Termite Destruction

The termite threat, which becomes an increasing menace with every succeeding summer, may be controlled by the application of Reilly Transparent Penetrating Creosote, a highly refined, blended coal-tar creosote oil from which have been extracted the substances which impart color and odor to the oil, also those which impede penetration into the wood. Product retains all the toxicity of crude oil, and is said to completely eradicate termites as well as preventing future infestation.

Zinc-Phosphate Solution for Rust-Proofing

"Granodizing" is a new method of rust-proofing, announced by The Ford Motor Company. The surfaces are first wiped with cloth soaked in low-grade gasoline, then hung in a zinc phosphate solution in which alternating current is used. In the final operation they are rinsed, dried, and dip-painted.

Floating Soap

A new type of floating soap, expected to bring about great changes in the soap industry because of its radical departure from traditional soap pressing methods, will soon be on the market. Producer, C. A. Crary Soaps, Inc., Wyoming-Cincinnati, O., plans to produce at first four types: olive oil, medicated, toilet, and shampoo, and its use in laundry soaps is envisioned also.

New Line of Fatty Acids

To meet the need for a very high quality of distilled fatty acids for the consumer trade, Archer-Daniels-Midland Co., Minneapolis, Minn., after considerable research work, is ready to make shipments of distilled linseed fatty acids, and shortly fatty acids of other vegetable oils.

Use of Cellulose Acetate in Containers

Cellulose acetate containers for food products, cosmetics and chemical specialties are now made from an acetone solution of cellulose acetate, which is shaped on suitable forms, dried, and stripped from the form. There is no shrinkage after taking the hollow shape from the form; thus the top and bottom of a container can be made on separate forms and they will fit perfectly. New containers are waterproof and almost unbreakable; no effect on the odor or flavor. Dr. Bratring, *Papier-Zeitung*, 1935, p472.

Metals and Alloys

Americans recently returned from Germany report successful experiments which prove that the presence of a small percentage of molybdenum in ingot iron mold is of distinct benefit. One advantage is the prolonging of the life of the mold. Others are known and imminent.

Low-Melting Alloy

A new quinternary eutectic of bismuth, lead, tin, cadmium, and indium was outlined by S. J. French at a recent meeting of the A. C. S. This alloy melts at 116.4° F. and freezes at 116.0° F. Additions of small amounts of mercury or thallium will lower the melting point still further. An alloy composed of the first four metals of the five listed above has been known as Lipowitz Alloy or Wood's metal. Its melting point is somewhat higher than the indium-containing counterpart, being 161.0° F.

Acetic Acid in Detinning Operations

De-tinning operations are much simplified and rendered less dangerous by using acetic acid in place of chlorine, a process noted by *The Chemical Trade Journal* in *The Engineer*. By heating the tin-plate in a closed chamber containing acetic acid vapor, the tin is attacked and a white layer of small water-soluble crystals is formed on the surface, the iron base not being attacked. The acid reacts with the tin at ordinary temperatures, although heating is desirable to speed up the reaction. Formic acid may be used in place of acetic acid.

Alloys for Food Industries

In manufacturing edible products not only the exclusion of poisonous metals must be considered, but the effects of color and flavoring or otherwise harmless impurities derived from the processing equipment. Likewise, the effect on the equipment of the material treated must be remembered. "Inconel," a Ni alloy containing 14% Cr and 6% Fe, is being produced by International Nickel for use in the milk industry. N. D. Sylvester, in *Chemistry & Industry*, 54, 279-282, feels that it should also find application in other branches. "Birmabright," a corrosion-resisting Al-Mg alloy, is not appreciably attacked by brines and has none of the tendency to the pitting characteristics of Al.

Miscellaneous

Dr. Victor T. Allen, St. Louis University, carries on petrographic investigation of Missouri fire clays. Investigations should throw light on burning behavior and utilization of this important raw material.

Aliphatic Amines for Controlling pH

Certain of the amines are suggested for use in anti-freeze preparations for controlling the pH. "New Aliphatic Amines," by A. L. Wilson, *Ind. Eng. Chem.*, August, '35, p863.

Sodium Bicarbonate for Sheathed Explosives

Sodium bicarbonate is recommended as an effective and practicable sheathing material for explosives for the prevention of firedamp ignitions. Safety in Mines Research Board, Great Britain, have investigated this and report it to work equally as well as the corresponding unsheathed explosive.

Solidified CO_2 to Operate Noiseless Motors

Solidified CO_2 is now being successfully used in Germany for the operation of noiseless motors. Experiments promise far-reaching effects in motor construction and technic. Motor is described as being of simple construction, high efficiency, of very light weight, and to embrace several innovations.

Illuminating Gas for Motor Fuel

Germany is now experimenting successfully with coke-oven gas as a motor fuel, according to a report from Consul S. B. Redecker, issued by the Department of Commerce. The methane is recovered from coke-oven gas and stored in tanks under normal pressure. The gas is later compressed in high pressure storage tanks which serve as filling stations for motor vehicles, making it unnecessary for the vehicles to carry compressors.

Lithium Chloride for Air-Conditioning

Lithium chloride solutions of high concentrations are satisfactory for the drying and conditioning of air, with humidities of as low as 11% obtained. "Concentrated Solutions in Air-Conditioning," by F. R. Bichowsky and Gilbert A. Kelley, *Ind. Eng. Chem.*, August, '35, p879.

Potash as Accelerator in Hardening of Cement

A process for the acceleration of the hardening of cement, perfected by The Soc. d'Etudes pour la Fabrication et l'Emploi des Engrais Chimiques and reported in the *Chemiker Zeitung*, consists essentially in the addition to the cement of 5 to 10% of its weight of sylvinite. Twenty to 30% increase in the initial strength of the cement is claimed.

Plastics and Glues from Soy Beans

Patents have recently been granted to Dr. Louis J. Fuhrmann, Century Distilling Co., Peoria, Ill., for the production of a new plastic material and a glue, both being obtained from the residue of soy bean oil. Plastic material can be converted in a bone-like substance that is a conductor of electricity and insoluble in acid, water or alkaline solutions. Glue will be useful in applying wood veneers and similar work.

Hydrochloric Acid Enters New Field

The yield of rosin and turpentine from indigenous pine trees can be increased very markedly by irrigating the tapping wounds with certain chemical solutions, particularly with a 25% solution of hydrochloric acid, according to trials carried on in Germany by Dr. Essenland and reported in *The Chemical Trade Journal* (London).

Anthracite in New Rôle

New uses for anthracite include: as a filtering medium, for sintering iron ore, as a filler for asphalt, and in the form of sintered anthracite slate as a concrete aggregate. Jones and Bullier, *Ind. Eng. Chem.*, August, p953.

Possibility of Fish Oils in Paints

Fish oils may find a very valuable application in paints. Orville Denstedt, McGill University, recently addressed the Canadian Chemists' Convention, and stated that the removal of fatty acids from these oils (such as pilchard) leaves an oil which gives remarkable results in paints. The dried film of paint using pilchard oil is very much harder than linseed oil films and is only one-quarter as permeable to moisture. It adheres well to varnish and is almost like varnish in appearance.

Liquid Fire Reagent

A liquid fire reagent for use in the analysis of leather is described in a paper by G. Frederick Smith and V. R. Sullivan to the A. C. S. The wet method of burning the leather sample is employed. The sample is burned by the action of the oxygen supplied through a new and powerful oxygen carrying perchloric acid. The leather dissolves in this acid when the two are heated together. This new method is said to shorten the analytical procedure in the determination of the exact extent to which iron is present.

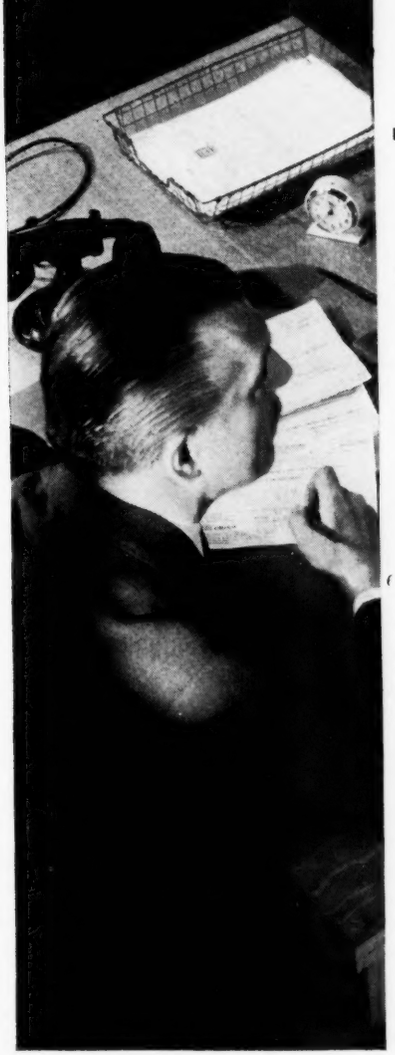
Ethylene Glycol Monoacetate as a Solvent

Investigation has revealed ethylene glycol monoacetate as an improved selective solvent for the separation of high-temperature carbonization tar oils and petroleum oils of similar boiling points. This solvent is now produced commercially. It is soluble in water and non-reactive as a solvent, thus permitting solute recovery by water dilution and possible separation and examination of both soluble and insoluble portions of any oil mixture.

Hydrogen Peroxide in Textile Bleaching

An interesting addition to the literature of textile chemistry is found in a treatise on the merits and use of hydrogen peroxide in textile bleaching, which appears in *Canadian Chemistry & Metallurgy*, July '35, p195. Author, G. D. Pratt, recommends proper equipment for process, outlines difficulties encountered in peroxide bleaching, and finally discusses the phases and methods of bleaching different textiles.

"That last shipment of Para-dichlorobenzene wasn't carefully screened and caked"



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ALPHA-NAPHTHYLAMINE
ALPHA-NITRONAPHTHALENE
AMINOAZOBENZENE-SODIUM-SULFONATE
AMINOAZOTOLUENE
AMINO G SALT
AMINO J SALT
ANILINE
ANTIOXIDANTS
BENZIDINE (BASE)
BENZOIC ACID, TECHNICAL
BETA-HYDROXYNAPHTHOIC ACID
BETA-NAPHTHYLAMINE
BROENNER'S ACID
CATECHOL
CHICAGO ACID
CLEVE'S ACIDS
CRESIDINE
DENATURED ALCOHOLS
DIANISIDINE (BASE)
DIBENZYL-PARA-AMINOPHENOL
DIBUTYLAMINE
DIETHYLANILINE
DIETHYL-META-AMINOPHENOL
DIMETHYLAMINE
DIMETHYLANILINE
DINITROBENZENE
DINITROCHLOROBENZENE
DINITROPHENOL
DINITROSTILBENEDISULFONIC ACID
DINITROTOLUENE
DINITROTOLUENE OIL
DI-ORTHO-TOLYLTHIOUREA
DIPHENYLAMINE
EPSILON ACID
ETHER
ETHYLACETANILIDE
ETHYL ALCOHOL
ETHYLBENZYLANILINE
FLOTATION REAGENTS
GAMMA ACID
G SALT
INHIBITORS
J ACID
KOCH ACID
L ACID
LAURENT'S ACID
METANILIC ACID
META-NITROANILINE
META-NITRO-PARA-TOLUIDINE
META-NITROTOLUENE
META-PHENYLENEDIAMINE
META-TOLUIDINE
META-TOLYLENEDIAMINE
META-XYLIDINE
MICHLER'S KETONE
MIXED-MONONITROTOLUENES
MIXED-MONONITROCHLORO-BENZENES
MIXED-MONONITROXYLENES
MIXED-TOLUIDINES
MIXED-XYLIDINES
MONOBENZYL PARA-AMINOPHENOL
MONOCHLOROBENZENE
MONOETHYLANILINE
MONOETHYL-ORTHO-TOLUIDINE
NEVILE & WINTHER'S ACID
NITROBENZENE
NITROBENZENE-META-SULFONIC ACID
NITRO FILTERS
OIL OF MIRBANE
ORTHO-AMINOPHENOL
ORTHO-ANISIDINE
ORTHO-DICHLOROBENZENE
ORTHO-NITROANISOLE
ORTHO-NITROCHLOROBENZENE
ORTHO-NITROPHENOL
ORTHO-NITROTOLUENE
ORTHO-TOLUIDINE
ORTHO-TOLUIDINE-META-SULFONIC ACID
PARA-AMINOBENZOIC ACID
PARA-AMINOPHENOL (BASE)
PARA-DICHLOROBENZENE
PARA-NITROANILINE-ORTHO-SULFONIC ACID
PARA-NITROBENZOIC ACID
PARA-NITROCHLOROBENZENE
PARA-NITROPHENOL
PARA-NITROTOLUENE
PARA-PHENETIDINE
PARA-TOLUIDINE
PERI ACID
PHENYL-ALPHA-NAPHTHYL-AMINE
PHENYL-BETA-NAPHTHYLAMINE
PHENYL GAMMA ACID
PHENYL-METHYL-PYRAZOLONE
PHENYL PERI ACID
PICRAMIC ACID
PICRIC ACID
RESORCINOL, TECHNICAL
R SALT
S ACID
SCHAEFFER SALT
SODIUM METANILATE
SODIUM NAPHTHIONATE
SODIUM PARA-NITROPHENOLATE
SODIUM PICRAMATE
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Booklets and Catalogs

Chemicals

A307. Acticarbone Corp., 25 Broadway, N. Y. City, publishes new booklet describing process for gasolene recovery from natural gas.

A308. American Cyanamid Co., Argicultural Div., 30 Rockefeller Plaza, N. Y. City. Sept.-Oct., *American Hortigraphs and Agronomic Review*, features discussions of fall fertilizer problems. Priced at 25c.

A309. J. T. Baker Chemical Co., Phillipsburg, N. J. July, *The Chemical Analyst*, contains articles on analytical methods and laboratory procedure. An excellent booklet for the laboratory man.

A310. Barada & Page, Kansas City, Mo. New August price list.

A311. Carbon Fuel Co. June *Carbon Fuel News* contains article on the magic of cellulose, as well as "Chemistry and Public Health," authoritative, and informative.

A312. E. I. du Pont de Nemours & Co., Wilmington. Du Pont presents booklet on Dulux, new white finish.

A313. Eastman Kodak Co., Rochester, N. Y. September *Synthetic Organic Chemicals* discusses chlorophyll, properties, and structure. Article on new reagents for halogens is of interest to analysts.

A314. Electro Bleaching Gas Co., 9 E. 41st st., N. Y. City. July, *The Pioneer*, tells of chlorine's fight against disease in New York State flood areas during July.

A315. Freeport Sulphur Co., 122 E. 42nd st., N. Y. City. First issue of *Brimstone Brevities*, which will feature original articles with particular emphasis on sulfur use in agriculture. Contains 15 interesting articles and departments, headed by review of Dr. Jacob Lipman's Chandler Lecture, "The Stuff of Life."

A316. Givaudan-Delawanna, Inc., 80 5th ave., N. Y. City. July *Givaudanian*, Industrial Aromatics Division, features article on new rubber deodorants.

A317. Givaudan-Delawanna, Inc., July *Givaudanian* contains article on isolation of aldehyde from violet leaf oil.

A318. Mallinckrodt Chemical Works, St. Louis, Mo. 122 page August price list is available.

A319. Merck & Co., Rahway, N. J. Merck's August Price List is obtainable.

A320. The Neville Co., Pittsburgh, Pa. "A New Plasticizing and Solvent Oil," data sheet for new Neville product, "Nevinol," is now available.

A321. Philadelphia Quartz Co., 121 S. 3rd st., Philadelphia. August *Silicate P's & Q's* contains thorough discussion of white silicate wares.

A322. Philadelphia Quartz Co. Bulletin No. 171 on brands, properties, and applications of silicate of soda presents unusually complete discussion. A brief history of this product is included in the booklet.

A323. Socony-Vacuum Oil Co., Inc. Mobil-Products dealer catalogue for all types of petroleum refinery by-product chemical specialties.

A324. Warwick Chemical Co., West Warwick, R. I. "Chemical Technology of Silk and Rayon Throwing" contains recent papers on critical silk and rayon problems.

Equipment

A325. Allis-Chalmers Mfg. Co., Milwaukee. "Gearmotors," Aug., Leaflet 2203.

A326. Alsop Engineering Corp., 39 W. 60th st., N. Y. City. New 6-page booklet describing high-speed filter units.

A327. Aluminum Co. of America, Pittsburgh. August *Aluminum News Letter* predicts busy fall and winter for aluminum industry.

A328. American Engineering Co. "Hele-Shaw Pumps, Motors, Transmissions." 44-page catalog complete with engineering data indicating construction, operation, and application of these "fluid power" pumps.

A329. Audubon Wire Cloth Corp., Castor ave., Allen & Bath sts., Philadelphia. "Audubon Wire Cloth," Catalog 40, complete with specifications, list prices, and miscellaneous information.

A330. Chicago Eye Shield Co., 2300 Warren Blvd., Chicago. "Industrial Head & Eye Protection" presents unusually complete line of goggles, eye shields, welding helmets, observation shields, respirators, spray masks, and sand blast helmets.

A331. General Electric, Schenectady, announce new weatherproof line wire of every type, size and voltage. Bulletin GEA-2103.

A332. B. F. Goodrich Co., Akron, Ohio. "Pneumatic Tires for Wheelbarrows and Industrial Trucks." Descriptions, illustrations, and specifications.

A333. Illinois Clay Products Co., Joliet, Ill. "Goose Lake Fire Clay Products & Therm-O-Flake High Temperature Insulation."

A334. Johns-Manville, 22 E. 40th st., N. Y. City. July, *The Power Specialist* presents Asbestos, "the magic mineral," first of a series of 6 articles dealing with origin, characteristics, history, and importance of this most "peculiar of nature's inorganic creations."

A335. Kux-Lohner Machine Co., 2145-47 Lexington st., Chicago. New 8-page booklet covers Kux line automatic continuous rotary tablet presses.

A336. Lewis-Shepard Co., Watertown Station, Boston, Mass. Circular 311, illustrates new materials handling methods and features lift truck platforms.

A337. The Linde Air Products Co., 30 E. 42nd st., N. Y. City. August *Oxy-Acetylene Tips*, latest issue of this excellent publication, discusses welding opportunities in the sheet metal industry. Contains also fine discussion of non-ferrous alloy use on hard-facing steam valves.

A338. Link-Belt Co., 233 B'way, N. Y. City. August *Link-Belt News*—more interesting uses for belt conveyors.

A339. The Miller Co., Meriden, Conn. Schedule R., series of circulars on Ivanhoe Reflectors, for use with mercury vapor or Mazda lamps.

A340. H. W. Porter & Co., Newark, N. J. "Thermo-O-Tile Steam Conduit System," Bulletin 352. Specifications for complete steam conduits and pipe line insulation system.

A341. Pulmosan Industrial Safety Equipment Corp., Brooklyn, N. Y. Description of hose units and carbon dioxide type fire extinguishers in one page pamphlet.

A342. Pulmosan Safety Equipment Corp. One page pamphlet on goggle type respirators.

A343. Quimby Pump Co., 340 Thomas st., Newark, N. J. Bulletin C-112, "Quimby Centrifugal Pumps," rubber-lined pumps for process industries, Type "DB."

A344. Republic Steel Corp., Massillon, Ohio. "Alloy Sheet Steel" (Copper-Nickel-Molybdenum), by Howard L. Miller, a paper on the commercial consequences of these new alloy developments, reprint from July, '35, *Metal Progress*.

A345. Ripley Mfg. Co., Wayne, Mich. Booklet announcing new bin-level indicator, "The Bin-Dicator," for automatic indication and control of bulk material levels in bins.

A346. Roots-Connersville Blower Corp., Connersville, Ind. Bulletin 21-B17, "Victor-Acme Rotary Positive Blowers for Pressure or Vacuum Service."

A347. Surface Combustion Corp., Toledo, Ohio. "Standard Gas Fired Air Heaters." Apparatus for low or high temperature drying and annealing.

A348. The Western Machinery Co., Wichita, Kans. New catalogue, Sec. B-1, laboratory and plant supplies for petroleum and allied industries. Suitable for any laboratory in general analysis or synthesis.

A349. Worthington Pump & Machinery Corp., Harrison, N. J. Model 105, Gasoline engine driven portable compressor. Model number represents cub. ft./min. actual air.

A350. Worthington Pump & Machinery Corp. Model 160, portable compressor.

A351. Worthington Pump & Machinery Corp. Model 210, Portable Compressor.

A352. Worthington Pump & Machinery Corp. Model 315, portable compressor.

A353. Worthington Pump & Machinery Corp. "Worthington Deep Well Turbine Pumps," Types Q & QA, for economical water supply.

A354. Worthington Pump & Machinery Corp. "Worthington Steam Booster Compressors."

Packaging

A355. Anchor Cap & Closure Corp., 22 Queens st., Long Island City, N. Y. Attractive pamphlet describing "Anchor Molded Caps."

A356. Chase Bag Co., 166 W. Jackson Blvd., Chicago. August *Bagiology*, amusing little booklet with just enough advertising and economic discussion.

A357. Commercial Solvents Corp., Terre Haute, Ind. August *Alcohol Talks*, contains amusing, readable story of alcohol packaging from goat skins to modern bottles.

A358. Manhattan Exposition Construction Corp., Grand Central Palace, N. Y. City. Booklet on "Exposition Exhibits" designed for those intending to show at coming Exposition in N. Y. City.

A359. Republic Steel Corp., Chicago. "Republic Wire—Wire nails and Wire products." Booklet includes wholesale price list for nails.

A360. Reynolds Metal Co., 19 Rector st., N. Y. City. "New Facts about Protective and Distinctive Packaging," for those interested in metal or metal foil protection.

A361. Wishnick-Tumpeer, Inc., 251 Front st., N. Y. City. June-July *Witcombings* discusses rise of the industrial designer and packaging expert to position of importance, a subject of interest to every chemical producer.

Received Late for Classification

A362. Climax Molybdenum Co., 500 5th ave., N. Y. City. August, *The Moly Matrix*, sees future for molybdenum alloys in Diesel engine cylinder heads and cylinder blocks.

A363. Electro Metallurgical Co., Carbide & Carbon Bldg., 30 E. 42nd st., N. Y. City. 4-page bulletin on columbium-treated stainless steels. New steels may be welded satisfactorily by either electric or oxyacetylene systems.

A364. Federal Pneumatic Systems, Inc., 127 N. Dearborn st., Chicago. "Federal Centrifugal Classifier," new, hermetically sealed classifying apparatus operated by opposing centrifugal air currents. Improved concentrates and reduced power are features of this radical design.

A365. D. W. Haering & Co., Inc., 3408 Monroe st., Chicago. August *H-O-H Lighthouse* contains editorial of exceptional general interest denouncing quackery and fraudulence in the field of water treating preparations. Corrosion control in brine systems is thoroughly discussed.

A366. Laboratory Construction Co., 1113 Holmes st., Kansas City, Mo. Description and specification for Goldfisch extraction apparatus capable of 50% solvent recovery, and more rapid condensation.

A367. Laboratory Construction Co. Kjeldahl nitrogen apparatus is described as durable, clean, and having uniform heat supply and suction in new 4-page booklet.

A368. The Lincoln Electric Co., Cleveland. "How to Make It Wear Longer by Hard Facing and Overlaying," 16-page, illustrated booklet of interest to arc-welding users.

A369. Pangborn Corp., Hagerstown, Md. Attractive booklet describes "Rotoblast," modern airless blast cleaning method, capable of cleaning metals, malleable castings, forgings, etc., and preparing cleaned surfaces for metallizing, sherardizing, galvanizing, and all types of plating. High blasting efficiency and low maintenance are outstanding features. Consists of only 3 major parts: rotor, blades, and impeller. Full details obtainable in separate catalog, No. 200.

A370. Patterson Foundry & Machine Co., East Liverpool, Ohio. Patterson belt or motor driven pebble mills. Construction details and all necessary specifications are given.

Chemical Industries,
25 Spruce Street,
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Plant Operation and Control

A Digest of the Current Literature for Makers of Chemicals

Phenol Production

Review of Progress in Synthesis and Extraction of Liquors

Question of phenol supplies is one of great importance to the plastics industry, manufacturers of phenolic resins in particular being interested in the various processes for making a pure yet cheap raw material for their use. Apart from its preparation as a coal-tar distillate there are 2 major sources, viz., synthesis from benzene via the sulfonic acid or chlorinated derivative, and the extraction from ammonia liquors using a solvent or an adsorbent like activated carbon. All these methods have proved successful, so that there is no reason for the fears that a shortage of supplies may occur.

Various estimates have been made concerning the quantity of phenol which would be available if ammonia still liquors were worked up completely.

As Dr. Levinstein pointed out in a paper given to the Plastics Section at a conference of the Society of Chemical Industry, the cause of the high price of coal-tar phenol is the difficulty of disposing of the cresols which are present in the proportion of 4½ lb. cresol to 4½ lb. phenol in each gallon of crude tar acids. Same authority claimed that synthetic phenol could be economically produced if the right conditions were observed, and that the cost of such a product would be about 4d. per lb. whether chlorbenzene or the sulfonic acid process be used.

Modern methods of preparing pure phenol from crude carbolic acid involve the settling of the crude raw material in order to remove impurities, the dehydration of the settled material, and then the controlled fractional distillation under reduced pressure, using columns in order to separate phenol from the cresols. High-pressure steam coils are used and the fractions are redistilled, the condensate passing through a 2-way outlet so that the phenol is delivered to the receivers, where it is kept liquid by use of steam pipes. Three grades of products are usually marketed: "ice crystals" in drums and containing 99% phenol; "detached crystals," purest form available in commerce and having a 99.8% phenol content; and "liquid carbolic acid" prepared by adding distilled water to molten phenol to form a product liquid at ordinary temperatures. As an example of the progress made in extracting phenol from crude ammonia liquors by use of solvents, a plant described by H. E. Jones (*Chem. Met. Engineering*, April, 1928) is typical of a large unit. In this plant a 96% recovery of phenol from 440,000 gals. per month of coke oven effluent liquors is attained, total annual yield being 25,000 gals. crude phenol. Liquor is scrubbed with benzol in 2 absorption towers in series, these being 36 ft. high and provided with liquid distributors at top and bottom, a perforated plate for spreading at the top and coke layers down the tower as screens. Benzol travels upwards with its lower s.g., and meets the liquor in counter-current. Two washers of the tower type are used to extract the phenol by use of caustic soda, the alkaline extract passing to the neutralizing unit to be treated with sulfuric, air agitation being used together with steam for removal of benzol. The latter from the 2nd washer contains only 0.01% residual phenol, and only once during 6 months' use it is necessary to distill it to free from tar. After steam-heating to remove benzol, the alkaline extract is further treated with live steam to remove other impurities before neutralization to give black crude phenol. A recent patent uses benzol as solvent in a tower packed with Raschig rings, the counter-current plant using solvent in the proportion of one-third of the volume of liquor in the tower and passing the liquids to continuous distillation plants. Tricresyl phosphate is a more recent form of solvent introduced because of the loss of benzol which occurs in benzol extraction systems. This new solvent has many advantages, although the initial cost is higher; it extracts from 10 to 20 times the proportion of phenol compared with benzol; it has a very low solubility and low solvent powers for the impurities in the liquors; and owing to the high boiling point its recovery is simpler, for a straight distillation yields the solvent for further use. Since its s.g. is higher than the liquors to be extracted, it is sprayed down the absorption towers while the liquor travels upwards, while phenols have to be recovered from it by use of vacuum distillation, for caustic soda extraction is prohibited owing to formations of emulsions and risk of hydrolysis of the ester. By use of 12 mm. pressure the phenol is readily recovered at 160° C.

Possibilities of Activated Carbon

Greatest promise lies in the use of activated carbon as an adsorbent in place of solvent extraction methods. D. W. Parkes studied this subject on a laboratory scale, the liquor being treated with carbon dioxide and the sludge which separates removed before passing to the carbon adsorption unit. After use of superheated steam to remove phenols with an 80% yield Parkes concluded that provided the right type of carbon be used the process was economically possible. At the Vereinigte Stahl Werke the activated carbon method has proved successful in working up liquors from a coke oven plant, these containing 0.8 to 1.2 gm. phenol per liter. First the tar is separated by a mechanical method before the liquor passes to one of the adsorbers, an extraction temperature of 65° C. being attained by use of a heat exchanger. After 3 to 4 hours the liquor is diverted to a 2nd adsorber while the first is extracted with benzol; and a third adsorber which has been treated with benzol is being steamed to remove residual benzol before taking its place as phenol adsorber. Process is thus continuous, the benzol at 65° C. dissolving the phenol from the carbon to give a 1.5% solution, which is passed to a column still heated by steam. Here phenol containing only 4% benzol is drawn off from the base and is treated for removal of this benzol.

Turning to the progress made in production of synthetic phenol, the Dennis-Bull process is noteworthy. It depends on the sulfonation of benzene by taking advantage of the fact that benzol dissolves benzene sulfonic acid to the extent of 2 to 3% of its own volume. Four vessels are mounted vertically, layers

TEXTILES

FASTNESS TO LIGHT IS AN ESSENTIAL QUALITY IN DYES USED FOR MAKING RUGS AND MANY OTHER PRODUCTS IN THE TEXTILE INDUSTRY. CONTINUOUS USE OF MUTUAL BICHROMATES FOR MANY YEARS BY THE LARGEST AND MOST EXPERIENCED DYERS AND PRINTERS IS GRATIFYING EVIDENCE OF THEIR UNIFORM DEPENDABILITY

Lowering yarn into dye kettles containing Mutual Bichromates, at the plant of Bigelow-Sanford Company at Thompsonville, Connecticut

BICHROMATE OF SODA
BICHROMATE OF POTASH
OXALIC ACID
CHROMIC ACID

MUTUAL CHEMICAL CO. OF AMERICA

★ ★ 270 Madison Avenue, New York City ★ ★

FACTORIES AT BALTIMORE AND JERSEY CITY — MINES IN NEW CALEDONIA

of benzol and an aqueous solution of benzol sulfonic acid, together with free sulfuric, being present in each vessel, and the benzol flows continuously through the system at the rate of 200 gals. per minute. As it bubbles through the perforated feed pipes and rises through each vessel in turn it extracts the sulfonic acid from the aqueous solution, the last vessel being discharged when free from sulfonic acid and fresh sulfuric enters the first to start the sulfonation. The layers in the other vessels move downward so that a counter-current sulfonation process is attained. Benzol flow removes the heat of the reaction and water-washers dissolve out the sulfonic acid from the benzol flowing from the plant.

Chlorination and Hydrolysis

Glut of chlorine from the alkali industry explains the increased attention which has been accorded to phenol production by chlorination of benzol followed by hydrolysis of the product. Apart from the work of Dow, who studied the possibility of using bromine and hydrolyzed the bromobenzene to give a yield of 85% phenol, all the major processes deal with chlorination and particularly with the question of hydrolysis. F. Baeyer patented the use of a copper salt as catalyst when hydrolyzing chlorobenzene with alkali or alkaline earth solutions, copper vessels provided with stirring gear and working at 170°-200° C. being found suitable. Meyer and Bergius have protected a number of valuable processes, one using 10% caustic soda at 300° as hydrolytic agent. They have also shown that since a temperature as high as 300° gave a tendency to form tar, very dilute alkali was to be preferred; that under conditions which yielded no phenol, the addition of a copper salt as catalyst caused its formation, although this favored the formation of tar as well. Using a rotating autoclave at 300° C., they tried the action of various alkalies with no addition of catalyst and obtained the maximum yield of 84.6% phenol, together with 8.2% diphenyl oxide as by-product when caustic soda was the agent. In the Aylsworth process, temperatures as high as 340°-390° are used and pressures of from 2,000 to 4,000 lbs. per sq. inch, a continuous autoclave giving a complete conversion of the chlorbenzene. A great advance towards solving the problem of avoiding the formation of diphenyl oxide as by-product was made when Hale and Britton obtained a complete conversion to phenol by adding to the reaction mixture a proportion of diphenyl oxide equal to that which would be formed by the quantites of raw materials used. This method of suppressing the loss of yield by appearance of by-product is now the subject of patents granted to the authors, from 10 to 12% of diphenyl oxide compared with the weight of chlorobenzene being the usual amount added. Further, the diphenyl oxide and benzene halide are miscible, and together emulsify the caustic soda, thus increasing the efficiency of the process. With all these modern methods available for producing synthetic phenol and for extracting economically the compound from ammonia liquors, the threatened shortage of this important commodity is a myth. *British Plastics & Moulded Products Trades*, August, p106.

Plant Equipment

Improved Autoclave Design

Design of autoclaves to meet increasingly severe conditions of temperature, pressure and corrosion has been made possible through the great advancement in the manufacture of alloy steels, and the elements which have been found most useful for alloying are vanadium, chromium, manganese, cobalt, nickel, molybdenum, tungsten and silicon. Nickel, 2 to 4%, increases the strength, yield point and hardness without decreasing the ductility, although much greater additions give the alloy a hard and non-ductile character. The low alloyed nickel-chrome steels with small additions of other elements are most valuable and when appropriately heat treated have a wide range of mechanical properties. A typical analysis of such a steel is: C. 0.3, Si. 0.2, Mn. 0.6, P. and S. 0.03, Ni. 2.5, Cr. 0.6, Mo. 0.6%, with Fe. the remainder.

In the presence of carbon monoxide these steels form iron and nickel carbonyls and vessels of this material are preferably lined with copper or an austenitic steel. Of the more highly alloyed steels use is made of a composition containing approximately 60% nickel, 12% chromium and 1 to 4% tungsten, and vessels have been constructed of this metal to withstand pressures of 1,000 atmospheres at temperatures of 500° C. for over 20,000 hours. This alloy is preferably cast, machined to size and then heat treated. Prevention of hydrogen penetration at high temperatures and pressures is largely overcome by the use of high chromium low carbon alloy steels of typical composition: C. 0.15, Cr. 6.0, Mo. 0.5, Mn. 0.5, Si. 0.5, with Fe the remainder.

Use of Forged Steels

For pressures above 100 atmospheres it is usual to employ forged steels. For pressures below 100 atmospheres electric fusion may be employed, and autoclaves can be constructed by this method having wall thicknesses of 3 ins. and internal diameters of 5 ft. capable of operating at 70 atmospheres and 200° C. Toughened cast steel is also used.

For purity of product, autoclaves may be fabricated from the virgin metal. Where construction in the virgin metal is too costly, steel lined with the desired material is used. Incidentally this lining can be chosen to perform a further function by assisting the reaction, and copper linings, in this way, have replaced the use of copper salts. For pressure reactions with ammonium chloride, linings of silver are preferable, the initial cost being offset by its long life.

Although the nickel-chrome and other alloys have characteristics of strength greatly in excess of mild steel, considerations of safe strength still limit the construction of large capacity autoclaves for service under conditions of high temperatures and pressures, since at high temperatures even these steels rapidly decrease in strength. The following tabulated values illustrate this:

Steel	Yield Stress Room Temp. Tons/sq. inch.	Limiting Creep Stress: Tons/sq. inch. 300° C.	400° C.	500° C.
Carbon Steel	29.3	29.6	15.6	2.7
Nickel Steel	37.3	32.0	12.8	2.5
Nickel Chrome Steel...	33.9	30.3	7.6	1.5
Chrome Vanadium Steel	59.0	47.5	18.2	1.8
Staybrite Steel	17.9	——	30.2	8.0
Stainless Steel	35.0	31.5	19.5	4.5

Experience has shown that wall thicknesses of vessels operating at pressures up to 300 atmospheres and 500° C. may be determined from the equation:

$$p = 0.6\ f \frac{K^2-1}{K^2}$$

where f = safe stress in the walls, K = ratio of external to internal diameter, and p = internal fluid pressure, "f" and "p" being in the same units and due allowance being made in the value of "f" for the operating temperature and the temperature gradient through the walls.

Very valuable data on the overstrain of metals is now available and the autofrettage process has done much to further the production of vessels able to withstand internal pressures of 3,000 atmospheres and more. Large joints are still made with spigoted flange and thin metal joint ring, but recent practice favors a line contact joint made by the curved side of the spigot against a coned face. Hydraulic testing of pressure vessels is serviceable but does not always reveal faulty material, and, where possible, all highly stressed parts should be subjected to radiological examination, especially before entering service for the first time. Agitation of the reactants is often necessary for good yields and rocking, rotating and shaking methods are in use. Recent Advances In Autoclaves, V. A. Yardley, British *Chemical Age*, June, p570.

Proper Construction of Concrete Tanks

Use of reinforced concrete tanks in process industries is widespread, but shrinkage cracks constitute a drawback. Shrinkage during setting and subsequent cooling may be prevented by careful temperature regulation immediately following casting thus allowing concrete time to develop sufficient tensile strength, or by use of cement having less rapid heat evolution without loss of early tensile strength. Possible remedies for gradual or time-shrinkage include use of cement having less shrinkage, greater construction speed, and allowance for shrinkage in tank design. Abstracted from article by G. P. Manning in *Concrete & Constructional Engineering*, May, p271.

Possibilities in a New Steam Water Heater

An electrically controlled steam water heater, utilizing a new system of heat transfer together with a new method of control and requiring no valves or other moving parts in the heat-transfer system, has been developed by General Electric's engineering laboratory. Although the device has not yet been placed in production as a new product manufactured by the company, installation tests now being made to determine acceptability, have shown promising results.

Plant Operation

British Advances Reported by Alkali Inspector

British 71st report of the Alkali Works Inspector contains several instructive items. At one alkali plant earthenware fume mains have been replaced by steel mains lined with rubber. In a number of cement plants electric precipitators are working efficiently although many stoppages are necessary for adjustments. Several new gas liquor-concentration plants are finding an improvement by the use of a large flow of weak ammonia liquor rather than a small flow of water in the final scrubber. The report indicates that in England there has been a considerable extension of the practice of removing carbon bisulfide from benzol both by washing with methanol-soda and by the Yorkshire Tar Distillers' method. In benzol plants excessive sludge formation in the absorbing oil is being remedied by using more refined oil, that is, spindle oil, or by better detarring of the gas.

Latest Methods of Treating Burns

Drug & Cosmetic Industry, August, p177, discusses treatment of burns. Carron oil, solutions of aluminum subacetate, sodium bicarbonate, boric acid, magnesium sulfate, etc., all popular in their day for the treatment of mild burns, have given way to newer agents and treatments of demonstrated greater efficiency and safety.

By far the least troublesome and most comfortable wet dressing for burns of limited degree and area is a 1% solution of trinitrophenol or picric acid, $C_6H_2.(NO_2)_3.OH$, because of its protective, antiseptic, astringent and analgesic properties. Although the wet dressing or compress method has been used more extensively with picric acid, and the spraying method of application of tannic acid is undoubtedly best for the treatment of severe burns, author and his colleagues have obtained most satisfactory and excellent results by combining picric acid and tannic acid with a local anesthetic and an ointment base as a remedy for mild burns of limited area.

An ointment containing about 5% of tannic acid, ½% of picric acid, and 2% of benzocaine will be found quite efficacious for first degree and mild second degree burns. A cooling effect may be obtained by the addition of menthol to the formula, and increased thickness by adding zinc oxide or starch.

Accidents and Pay-Days

Accidents increase on pay-days experience at least at one of the British Imperial Chemical Industries' plants indicates. As a matter of experimentation the pay-day was changed and the "bad accident" day shifted. August issue of the I. C. I. Magazine.

Proper Lubrication

Power plant lubricants must possess 6 essential properties. Viscosity of the lubricant must be sufficient to prevent contact of bearing surfaces, and there should be no gum-forming ingredients present. Low coefficient of friction and high flash and burning points are essential, as is freedom from corrosive alkalies or acids. In composition, the lubricant must have a maximum fluidity consistent with body. *Rayon & Melliand Textile Monthly*, August, p29.

Heavy Chemicals

Acetic Acid from Methanol and Carbon Monoxide

Commercial success of the catalytic, vapor-phase synthesis of acetic from methanol and carbon monoxide under pressure, according to the equation $CH_3OH \& CO = CH_3COOH$, depends upon the development of a stable, active catalyst and the elimination of side reactions. Activated carbon impregnated with phosphoric is catalytically active but the life of such a catalyst is limited. Other governing factors are temperature, pressure, velocity, composition of reacting products and the recirculation of by-products. Sengh and Krase, *Ind. Eng. Chem.*, August, p909.

New Sulfuric Acid Catalyst

In a new German sulfuric process (The Metallgesellschaft, Frankfort), from gases containing sulfur dioxide, a catalyst of potassium oxide-vanadium oxide-silica is employed.

New Electrolytic Process for Hydrated Alumina

Several Ukrainian chemists claim a new electrolytic process for the production of hydrated alumina based on the fact that in the electrolysis of aqueous solutions of aluminum sulfate a precipitate of aluminum hydroxide is obtained at the cathode. To obtain satisfactory results an alkaline sulfate, preferably 1% of ammonium sulfate, should be added to the aluminum sulfate solution.

Hydrogen Peroxide by the Barium Process

Production of hydrogen peroxide by the barium process is revived through the use of modern equipment, continuous methods of operation, automatic control devices and the use of barium ore of exceptionally high purity. Carr, *American Dyestuff Reporter*, July 29, p441.

Porous Support for Platinum Catalysts

Adadourov reports in the *Journal Prikl. Khim* that waste material from aluminum chloride production when kaolin is the raw material employed makes a very satisfactory porous support for platinum catalysts in sulfuric manufacture. Thin coatings of platinum are formed on the surface by applying a solution of platinum chloride in oil of turpentine (preferably treated with sulfur monochloride) and igniting the mass. Starting from a gas containing 6 to 7.5% sulfur dioxide, such a catalyst gives an oxidation yield of 96 to 97% at a temperature of 350 to 475° C. It is resistant to water vapor under normal industrial conditions and is easily regenerated by air-blowing at 600° C. Like other platinum catalysts supported on silica gel, arsenic readily poisons it. Digested in *Chimie et Industrie*, July, '35, and reported in British *Chemical Age*, Aug. 17, p152.

Production of "Caseins" Described

C. Porcher reports 2 types of casein. First, casein precipitated by acids, and secondly "rennet casein," which is a double salt containing calcium paracaseinate and calcium phosphate. Mineral ash from the latter should not vary from the limits of 7.2 to 7.5% for a good quality material. Manufacturing methods are usually of 3 types, giving products known as rennet casein, self-soured casein and muriatic casein. First

treats skim milk at 36° C. for 15 to 20 minutes, when rennet causes a curd formation which is heated with steam, thoroughly washed and dried at a low temperature. For higher yields and better texture of final product the addition of 0.01% calcium chloride to the milk is included, and the drying is carried out below 63° C. Natural souring process occupies several hours and is really an acid precipitation method, since lactic acid is the coagulant; the warm residual liquor serves to start a 2nd batch. A temperature of 38° C. is used, the soft curds are clumped by heating with steam jets and the material washed, pressed, dried in tunnel driers and ground. For muriatic casein either sulfuric or hydrochloric is used at a temperature of below 65° C., the tough lumps being drained, steam-treated, kneaded and dried; for washing is not possible in this case. The product is hard and not easily wetted, whereas the casein from the lactic acid method is the softest form. A modification is to use constant stirring and slow addition of acid, working with a *p*H solution controlled between 4.6 to 4.8 and the product is the "grain-curd" casein. British *Chemical Age*, April, '35.

Coal-Tar Chemicals

Production of Non-Toxic Household Gas

Production of non-toxic household gas is described by Dr. Wilhelm Bertelsmann in the *British Gas Journal*, June 19: Method which produces a gas with a carbon monoxide content below 1% depends upon the reaction between steam and carbon monoxide at high temperatures and under catalytic influences. A catalyst (nature unspecified) has been discovered which works well at a temperature of 750° C. and allows of the reduction of the carbon monoxide content to less than 1% without any great consumption of steam. As, owing to the formation in the process of carbon dioxide, the calorific value of the detoxified gas is reduced, it is necessary by means of preliminary treatment so to modify the initial composition of the gas that after treatment the product has a standard calorific value.

Modification necessary in the primary gas can, says Dr. Bertelsmann, be easily effected in any gas works. Where the water gas is produced in a special plant, the admixture of water gas is correspondingly reduced, and where the steaming process in vertical retorts or chambers is adopted, the length of steaming is suitably shortened. In both cases, the steam saved is used for detoxifying the gas. As the thermal unit in water-gas is more expensive than that in coal gas this alteration in the composition of the gas does not entail any increase in the cost.

Process is claimed to have advantages additional to those depending upon the minimization in the poisonous properties of the gas. First, during the detoxification, the organic sulfur in the gas is converted into hydrogen sulfide to the extent of about 90% which can easily be eliminated. Further, the benzol or light oil recovered from the treated gas is practically free from sulfur; samples of benzol obtained from detoxified gas, with active carbon, showed on analysis a sulfur content of 0.3% corresponding to 0.8% of thiophene. Presence of carbon bisulfide in the sample of benzol cannot even be detected qualitatively. Treatment also reduces the hydrocyanic acid and naphthalene contents of the gas, the former to one-fourth and the latter to one-half.

Impregnating Rubber with Tar

Conclusions reached by Pratt and Handley, working under Prof. G. T. Morgan at The British Chemical Research Laboratory, England, on the subject of incorporating rubber with tar products, and published in the June issue of the Bulletin of the Rubber Growers' Association, are: (1) Vulcanized or unvulcanized rubber is readily introduced into low temperature or vertical retort tars previously dephenolated either by (*a*) dissolving the rubber in selected oils and adding the desired proportion of pitch, or by (*b*) homogenizing the prepared tar direct with latex, with subsequent removal of water. (2) Vulcanized rubber is compatible with horizontal retort tar, but to prepare a complex consisting of this tar and unvulcanized rubber, a diluent must be added; low temperature tar oil is a suitable medium as are to a lesser degree horizontal retort tar oils previously freed from crystalline material. (3) Rubber can be incorporated into any pitch by the use of a volatile tar oil (preferably low temperature tar oil) which dissolves both rubber and pitch and can be removed by steam distillation.

Method of Making Lignin-Phenol Resins

Lignin-phenol resins are produced by mixing the lignin or wood sawdust with phenol in the presence of 0.1% concentrated hydrochloric, operation being effected at 180° during two and one-half hours. Reaction product is washed in order to eliminate free phenol which has not reacted and is extracted with ethyl alcohol. Complex lignin-phenol is precipitated from its solution by the addition of water. It contains free OH groups which can be methylated. Soviet, *Plasticheski Massi.*

Anthracene Purification

Monoszon and his Russian co-workers report a new method of anthracene purification based on the fact that anthracene is much less soluble than phenanthrene and carbozole in liquid ammonia. *Russian Journal of Chemical Industry*, April, '35.

Petroleum Chemicals

Duo-Sol Process Described

Basic principle of the Duo-Sol process of refining lubricating oils is described by Tuttle in the July issue of British *Petroleum Times*, p79. Propane as a paraffinic solvent may be used in conjunction with a naphthenic solvent to accomplish 3 purposes—the first being, by simultaneous use, to increase the selectivity of the separation; the second, to provide a stripping section so that fractionation by solvents may have the elements required for maximum quality and yield, viz., rectification and stripping; and the third, to make the extraction system independent of the characteristics of the charging stock whether because of naphthenicity, specific gravity, viscosity, boiling range, or nature of impurity.

The Duo-Sol process provides an extraction system in which 2 liquid solvents are employed, each having a limited miscibility in the other, and one a selective-solvent action for the more paraffinic crude fractions, and the other a selective solvent action for the non paraffinic fractions.

Manufacture of Metallic Naphthenates

Principal application of naphthenic acid in connection with the paint and varnish industry is in the production of metallic naphthenates as driers and anti-fouling agents. Their production is reported by C. G. Gray, writing in the British *The Petroleum Times*, Aug. 17, p187, as follows: Metallic naphthenates are generally prepared by a precipitation method. Naphthenic acid is saponified with a sufficient quantity of aqueous caustic soda in boiling solution. Any unsaponifiable mineral oil which separates at this stage is removed as completely as possible. Solution of sodium naphthenate is then cooled, and the desired metallic naphthenate precipitated by addition of the theoretical quantity of a soluble salt of the metal in aqueous solution. Naphthenate precipitate is then washed with hot water and finally dried. This may conveniently be effected by fusion until all water is driven off.

Propane-Butane Fractions

Dr. R. Fussteig concludes that the propane-butane fraction is highly suitable for conversion into gasoline, while pyrogenic decomposition yields unsaturated bodies suitable for alcohol manufacture. *Chemie et Industrie*, July, '35.

Fine Chemicals

New Process for Vanillin

Dr. Christo Geneff, a Sofia chemist, has, according to the *Chemiker Zeitung*, patented a new process for vanillin and ethyl vanillin from the corresponding aryltrichlormethylcarbinols. Two advantages are claimed: that by the use of appropriate catalysts, reaction can be carried out in high concentrations; that high yields can be obtained with the use of relatively cheap catalysts.

Liquid Bromine as a Cellulose Solvent

Beutel and Kuzelnigg, notes the *Chemiker Zeitung*, are carrying on experiments that strongly indicate cellulose can be entirely dissolved by liquid bromine. Keratine is also soluble in an excess of liquid bromine.

Reaction of Anhydrous Methanol and Carbide

Prof. A. Contardi and Dr. B. Ciocca, reports British *Nature*, prove that the statements appearing in the chemical literature that anhydrous alcohols do not react with calcium carbide is not correct, for their experiments prove that water-free methanol acts readily with powdered carbide even at ordinary temperatures to yield calcium methoxide and acetylene with no homologues formed.

Manufacture of Citric Anilides

Three citric acid anilides are produced as follows: To prepare the monoanilide, 50 g. freshly distilled aniline are warmed with 30 g. citric acid crystals at 60 to 70° C. when a yellow liquid forms. Temperature is raised to 120 to 130° C. and held for 2 to 3 hours. Brown syrupy mass is cooled and boiled for 30 minutes with 200 c.c. water prior to cooling down to 80° C. and filtering. Residue is washed until neutral and the entire filtrate concentrated to crystallize the monoanilide (m. p. 164° C). Residue, comprising citric acid di- and tri-anilides is boiled in 200 c.c. water for an hour, filtered, and the residue washed with water. On standing, the yellow filtrate deposits crystals of the dianilide (m. p. 179° C.). Residue is washed with alkali prior to recrystallization from dilute alcohol to give the trianilide (m. p. 199° C.). di Mento, *Ann. Chim Appliceta*, 24, p464.

Fluorine by Electrolysis

Fluorine production by means of a revolutionary electrolytic apparatus is described by Prof. Max Bodenstein in *Chemische Fabrik*, July 24.

Production of Glyoxaline Series

Weidenhagen describes a new method for the production of the glyoxaline (imidazole) series, products used in pharmaceuticals. *Chemiker Zeitung*, July 24, p604.

Sugar Derivatives by a New Process

A new direct method for the production of sugar derivatives and particularly cuproxanthogenate of glucose in the form of methyl glucoside is described by Dr. T. Leiser, *Chemiker Zeitung*, July 24, p605.

Standards

British Sampling of Coal Tar

British Standards Institution has issued a British Standard specification for sampling of coal tar and its products. Specification covers general precautions, design and use of apparatus, general sampling procedure for packages, tanks and pipe lines, and method of preparing samples. Committee responsible for this specification points out, however, that standards cannot take the place of judgment, skill, and experience, and their directions should be used only as a supplement to the experienced man. Copies of British Standard specification No. 616 (1935) may be obtained from the Publications Department, British Standards Institution, 28 Victoria st., London, S.W. 1, price 2s. (2s. 2d. post free).

Research in Welding

Engineering Foundation announces plans for advance research in welding, "the most important and widely used tool in industry." Project is sponsored by the American Institute of Electrical Engineers and the American Welding Society with appropriations provided by the Engineering Foundation, and by subscription. The program, international in scope, is in the charge of Comfort A. Adams, Harvard professor, and American Bureau of Welding director, plus a committee including representatives from G. E., U. S. Steel, Air Reduction, Union Carbide, and many other prominent industries. The plan calls for research to improve present methods of welding and extension of its application into new, untried fields.

Laboratory

Latest Reagent in Metal Analysis

Tetraphenylarsonium is a new organic radical recently discovered by Blicke and Monroe. It is prepared from triphenyl arsine, which was made in large quantities during the war as an intermediate in the manufacture of poison gas. Soluble salts of this base have been found to form very insoluble compounds with a number of acids which rarely form even moderately insoluble salts. Of particular interest are the perchlorate, periodate and perrhenate.

Rhenium is one of our most recently discovered metals and chemists all over the world have been seeking a means of analyzing for this element, because, unlike most rare elements, it is being produced in Germany in commercial quantities, and appears to have some industrial uses. Various methods have been proposed for the determination of this metal, none of which were entirely satisfactory. Tetraphenylarsonium perrhenate is a crystalline, extremely insoluble precipitate with a high molecular weight and particularly well suited to the precipitation of this metal and its separation from other elements.

Tetraphenyl arsonium chloride forms an extremely insoluble periodite, $(C_6H_5)_4AsCl.I_2$, which serves as the basis of a very sensitive volumetric method for determining iodine, as well as for the arsonium base itself. The chloride also forms insoluble compounds with chlorides of cadmium, zinc, tin, antimony, mercury, quadrivalent lead, bismuth, platinum and gold. Most of these can be used in quantitative analysis, and possess all the qualities desired in such precipitates.

Rapid determinations of zinc, cadmium, mercury, platinum and gold have been made by this method with a high degree of accuracy. The expense of the reagent is at present a serious disadvantage, but this can be overcome if there is sufficient demand for it. Prof. H. H. Willard and Headlee Lamprey, both of Michigan, before San Francisco A. C. S. meeting.

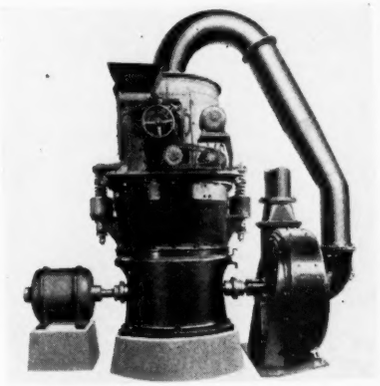
Detection of Small Amounts of Glycerine

Detection of .005 mg. glycerine in a drop of solution is now carried out by a sensitive fluorescence reaction in which glycerine is oxidized to dihydroxyacetone, the acetone converted to aldehyde with concentrated sulfuric acid, and the product reacted with solid meta-hydroxy benzoic acid. Allyl alcohol, also yielding dihydroxyacetone on oxidation, may be detected by a similar green fluorescence. A blue fluorescence characterizes reaction of glyoxylic acid when pyrogallic acid is used as a reagent. Oxalic acid may be detected by similar reaction if magnesium powder is used to aid initial reduction. Eegrive in *Z. analyt. Chemie*, 1935, pp31-36.

New Equipment

Revolutionary Design in Pulverizers QC 276

A radical departure from conventional types of pulverizers is announced. Machine has been under development for a considerable period, and has been subjected to extended service tests, including nearly a year's commercial service in one of the well known utility plants. Its design makes for low friction losses, hence low power consumption, quiet running and low maintenance, because of no metal-to-metal contact between the bowl and the rolls. Adjustment may be made from the outside while the mill is running. These 2 last mentioned points make for high availability. Speed is constant with the output controlled by varying the rate of feed. Mill power is almost directly proportional to the load. Mill is adapted both to direct firing and to storage systems in coal grinding operations. It is also highly efficient for pulverizing other non-metallic minerals and various manufactured products.



Unique feature of the mill is a revolving bowl, or grinding chamber. Due to centrifugal force, the coal which is ground between the reduction rolls and the grinding ring, works its way up the inclined walls of the bowl. As the ground particles reach the rim, the fines and intermediate sizes are picked up by the air current coming up from the annular spaces around the bowl and are carried into the separator above for further classification. As the finished material is separated out, the oversize drops back and re-enters the mill with the raw feed.

New Outstanding Recording Instruments QC 277

On its 75th anniversary, one of the leading control instrument makers announces a new and complete line of recording and indicating air operated controllers for temperature, flow, pressure and liquid level. Most outstanding of these is the "Air-o-Line," a controller with 1% to 150% throttling range and automatic reset. This control system recognizes and corrects for the magnitude, rate and direction of departure from the control point. These instruments are capable of full automatic control and will maintain a process at the control point within extremely close limits.

In addition to the "Air-o-Line," 3 other types of air operated controllers are included in the new line. These are, the "Full Throttler," a controller with 1% to 150% throttling range and manual reset; the "Throttler," a controller with 1% to 10% throttling range and manual reset; and the "On-Off Controller," a controller for 2-position service.

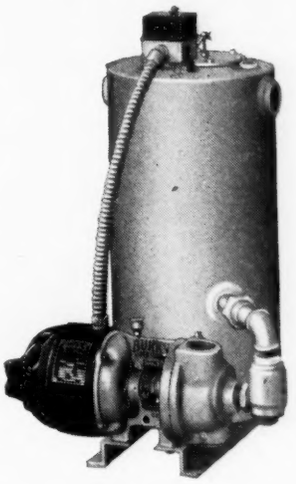
Checking Bulk Chemical Storage QC 278

Wherever bulk chemicals are handled the new "Bin-Dicator," a device which measures accurately when a material level reaches or drops below any predetermined point, will prove most useful. This device operates on the principle of the lateral pressure of bulk material moving a diaphragm against a counterweighted level system. When the material level in the bin reaches the point where the Bin-Dicator is mounted, the lateral pressure exerted by the material forces the diaphragm outward, tipping the lever blade and actuating a mercury switch.

Conversely, when the material level drops, the pressure against the diaphragm is released and the action is reversed. Through a signal alarm system this device makes it possible to control accurately the distribution of materials in a series of bins.

Economy for Small Steam Plant Operators QC 279

For the chemical or process industries company which operates a small steam plant a new condensation unit is suggested for economy. Claims made by the manufacturer include: Fuel saving, increased efficiency, labor saving, longer life for the boiler. Equipment has but one moving part; is automatically self-priming; is made of non-corrosive materials; and is extremely compact.



In the illustration, it will be noted that the suction pipe of the pump passes through the side of the tank. The receiver tank is to be vented to atmosphere from the vent tapping in the top of the tank, and the vent pipe should be reasonably large so as to prevent rust and corrosion clogging the vent pipe. The strainer shown in the suction line performs the function of preventing scale and dirt from getting into the pump. Large, roomy opening at bottom of strainer facilitates cleaning. A cast-bronze screw cap seals this opening when in use.

Checking Electrically Operated Machinery QC 280

Leading manufacturer of electrical equipment reports a meter for totalizing running or idle time on electrically operated machinery. Where desired, meter can be installed in the superintendent's office.

Anode Filter Bags QC 281

Filter bags for anodes are an innovation in electro-plating equipment. They consist of 2 cloth bags, one fitting inside the other, with a layer of filter paper between.

Temperature Indication QC 282

Temperature of small motors, bearings and machines is usually determined by one of 2 methods: (1) the operator tries to tell how hot the machine is by "feel"; (2) a fragile thermometer is taped onto the machine. This takes time, is inconvenient and is only adapted to emergency purposes. Big machines have built-in temperature recorders, but the need for a similar device for small machines is conceded. To meet this need, there has been developed a convenient "spot" device called the "Ideal Tel-temp" for quick and accurate determination of temperature in both open and closed motors, bearings, air compressors, centrifugal pumps, chippers, grinders, etc. It is a small industrial thermometer that can be attached easily and quickly to motors, generators and other machines, and which indicates operating temperatures at a glance. It is practical for use on small motors, bearings, machines, etc.

Chemical Industries,
25 Spruce Street,
New York City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

QC 276	QC 279
" 277	" 280
" 278	" 281
	" 282

Name .....

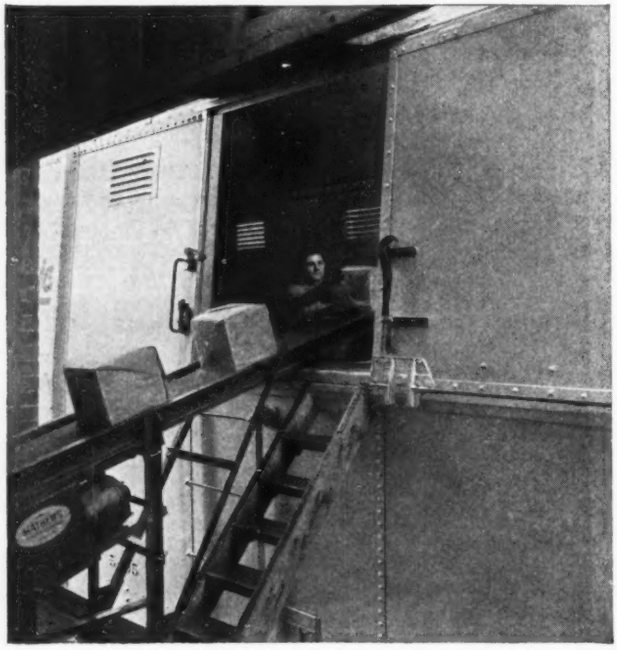
Title .....

Address .....

Packaging, Handling and Shipping

¶Shipment of Solid CO_2 Presents Interesting Problems to the Car Manufacturer—Douglass Answers the Question "How Does An Industrial Designer Approach His Problem?"—How Should Packaging Materials Be Purchased?—

Demand for dry CO_2 has brought about the introduction of streamlining into the construction of freight cars, 5 cars of this type having been especially built for Liquid Carbonic of



—Courtesy Packing & Shipping.

Close-up view of loading chute for handling dry CO_2 cakes to new streamlined cars.

Chicago, for the transportation of their product. Cars were constructed in the shops of American Car and Foundry in Chicago, according to specifications submitted by Liquid Carbonic refrigeration engineers.

These cars are of all steel construction and each have a capacity of 30 tons of ice, carried in steel bins insulated at the bottom and along the sides by 14 inches of cork, balsam wood and pitch. Bins, 8 in each car, are designed to carry a standard number of 55 pound blocks of ice. Built-in conveyors help in the loading and unloading, and the blocks fit snugly into the bins, thus reducing breakage and other damage incidental to the vibration of fast moving freight cars. It was to speed up distribution from the Liquid Carbonic factories to their immediate markets that the new cars were designed. "Shipping Dry Ice," by W. H. Evans, *Packing & Shipping*, August p7.

Steps In New Package Design

Question has been asked: "Just how does an industrial designer approach his problem?" As an example, let us suppose the problem is a package for paint or ink. Raymond Loewy, in a previous article in this series, has spoken of the advantage an independent designer holds over anyone on the staff. The staff designer, knowing from his own bitter experience how many difficulties are entailed in the slightest change, remembering how often in the past he has been told "It can't be done," is tempted to fiddle. He may change the lettering or the color of the wrapper but he is less able in the nature of things to cut back freely to the essentials as an independent designer may and should do.

In packing paint or ink the essential thing, it seems to me, is color. Paint is color. Color is its reason for being and the package should express that fact. I think the interior of a paint shop or its windows should rival a rainbow, if not in quality of color at least in quantity.

A second essential is the material. In this case tin, being cheap and airtight, seems indicated. But because it is indicated, the designer should not leave it at that. Paper, for instance, should be examined as a possibility.

A third essential would be shape. A square can on account of its economy of space should be considered. If the present type of cover is used, pouring would be simpler from the corner of a square.

It may not be essential but it certainly would be a help if paint and especially ink cans could be more easily opened. I have spent a good many unhappy moments trying to open cans of etching ink and it occurs to me now that one of those little gadgets they used to put on cans of shoe polish might be useful. At least, the question of opening should be part of the program.

With these essentials in mind, the designer makes a sketch. He draws a square can with a square cover slightly raised so that the poured paint clears the edge of the can. Across one side he paints a wide, bold band of color. It would seem to me ideal but of course not necessary and perhaps not practical if that brush stroke could be painted directly on each can with the actual paint it contains. No printed sample or color card is ever entirely accurate. Then the manufacturer's monogram is stenciled beside it in black. That is all that is really needed. The color, the real color, fugitive or fast, flat or enamel, is there for all to see; and the manufacturer's stamp which is his surety for the value of his product. This monogram should be distinctive, even if it is changed from one which is venerable and loved. We have too many trademarks here in America which are simply initials within a circle, diamond, oval, etc. Abroad, designers have been doing wonderful things with trademarks.

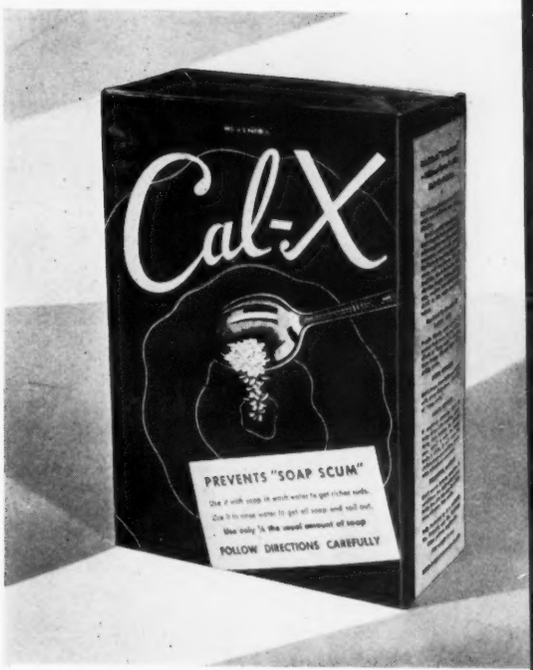
Then necessary lettering may be run around the base of the can and a sticker with instructions pasted on the back. Finally, the designer submits his sketch. It is probably impractical and expensive but out of it may come some inspiration and improvement. Donald M. Douglass, Wishnick-Tumpeer's *Witcombings*, July, p4.

Haphazard vs. Orderly Buying

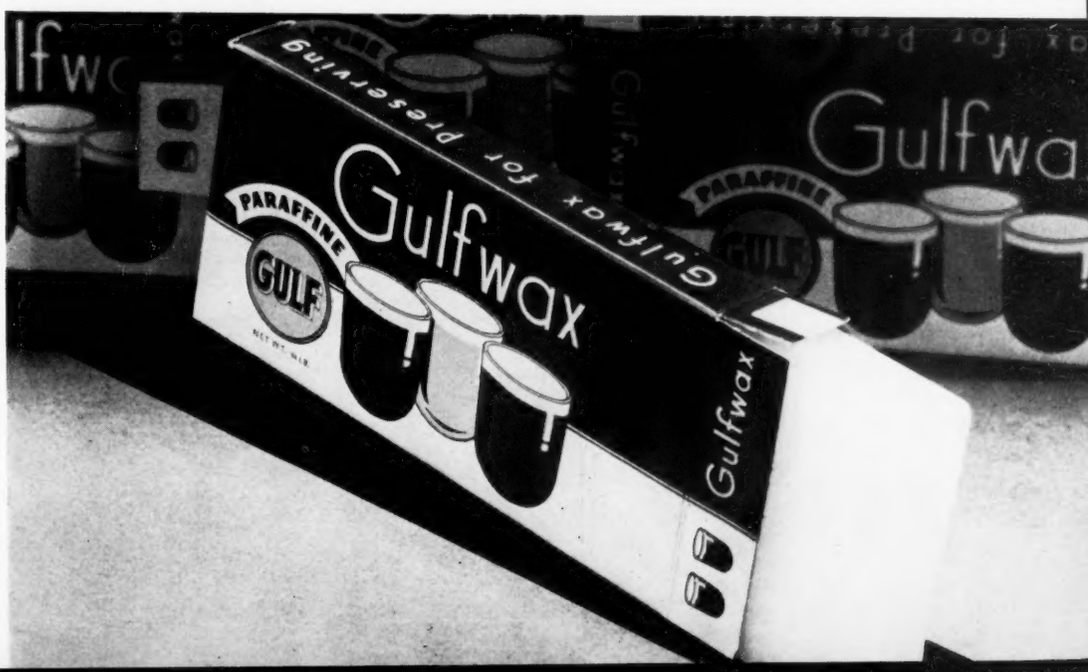
Murray Crossman Binford, writing on "Purchasing Packaging Materials," in the August issue of *The Drug and Cosmetic Industry*, criticizes the purchasing agent who contracts for large quantities of materials on the strength of what is generally a hand-made sample. He suggests that the basis of orderly purchase depends upon 3 elements—specifications, standards and inspections.

Nu-Enamel, Chicago, pioneer of the "Paint It Yourself" idea, introduces three new specialties that fit in very nicely with its general line of paints, enamels, etc. Art work for the labels was done in the studio of Frederick J. Garner, Chicago. Fibre cans with tin top and bottom and friction plug are by American Can.

General Food Sales, N.Y. City, is now marketing a brand new household cleanser which prevents "Soap Scum." Vaughn Flannery of Young & Rubicam was the designer of the bright yellow and blue package.



Rainproof Auto Wax is the latest new product released by the J. A. Tumbler Laboratories, Baltimore, one of the country's leading producers of chemical specialties.



Gulfwax is a new sealing wax for preserving. Gulf Refining is using a colorful package as a powerful merchandising aid in urging the housewife to try Gulfwax.

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Amino Azo Toluene Base
Amino G Salt
Amino H Acid
Amino J Acid
Amino Phenol Sulphonic Acid (1:2:5)
Aniline Oil
Anthraquinone
Anthrarufin

Benzanthrone
Benzidine Base-Distilled
Benzoyl Benzoic Acid (Ortho)
Beta Amino Anthraquinone
Beta Naphthol
Beta Naphthylamine
Broenners Acid

Calcium Malate (Normal)
Cassella Acid
Chicago Acid (SS Acid)
Chlor Benzanthrone
Chlor Quinizarine
Chromotropic Acid
Cleves Acid (1:6-1:7 & Mixed)
Cumidine

Dianisidine
Diethyl Aniline
Dimethyl Aniline
Dinitrobenzene
Dinitrochlorobenzene
Dinitrotoluene (M. P. 68°—66° 55°—20°)
Dinitrotoluene Oily
Dinitrophenol
Dinitrostilbene Disulphonic Acid
Di-Ortho-Tolyl Thiourea
Diphenyl Methane
Ditolyl Methane

Epsilon Acid
Ethyl Benzyl Aniline
Ethyl Benzyl Aniline Sulphonic Acid

Fumaric Acid

G-Salt
Gamma Acid

H-Acid
Hydroquinone

Isatin

J-Acid

Koch Acid

L-Acid
Laurents Acid

Malic Acid
Maleic (Toxilic) Acid
Maleic (Toxilic) Anhydride
Metanilic Acid
Meta Nitro Para Toluidine
Meta Phenylene Diamine & Sulpho Acid
Meta Toluylene Diamine & Sulpho Acid
Mixed Toluidine
Myrbane Oil

Neville-Winthers Acid
Nitro Amino Phenol (4:2:1)
Nitro Benzene
Nitroso Phenol (Para)

Ortho Anisidine
Ortho Chlor Benzaldehyde
Ortho Chlor Benzoic Acid
Ortho Chlor Toluene
Ortho Nitro Anisole
Ortho Nitro Toluene
Ortho Toluidine

Para Amino Phenol
Para Amino Acetanilide
Para Nitroaniline
Para Nitrotoluene
Para Nitroso Dimethylaniline
Para Toluidine
Peri Acid
Phenyl J-Acid
Phenyl Peri Acid
Phthalic Anhydride

Quinizarine

R-Salt

S-Acid
SS-Acid (Chicago Acid)
Schaeffer Salt
Schoellkopf Acid
Sodium Hydrosulfite
Sodium Metanilate
Sodium Naphthionate
Sodium Sulphanilate
Succinic Acid
Succinic Anhydride
Sulphanilic Acid

Tetra Chlor Phthalic Anhydride
Thiocarbanilide
Tolidine
Tolazine
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INTERMEDIATES

U. S. Chemical Patents

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Agricultural Chemicals

Production emulsifiable insecticides and fungicides by treating lighter petroleum fraction with sulfuric acid. No. 2,006,456. Joseph Hidy James, Pittsburgh, to Clarence P. Byrnes, Sewickley, Pa., as trustee.

Production insecticidal and fungicidal spray by reacting sulfonated water gas creosote oil with calcium polysulfides and suspending product in lime-sulfur solution. No. 2,006,895. Robert H. Hurt, Charlottesville, Va.

Production simple, single-compound, nitrogen-fertilizer by fusion of water-containing ammonium nitrate. No. 2,007,419. Gerrit Berkhoff, Jr., Kerensheide, Netherlands, to De Directie van de Staatsmijnen in Limburg, Heerlen, Netherlands.

Production herbicide of furfural homogeneously mixed with a less volatile hydrocarbon distillate. No. 2,007,433. Irving E. Melhus, Ames, Iowa.

Chemical production of germinated or ungerminated husked grain. No. 2,007,693. Rudolf Ruter, Cologne-Deutz, and Kurt Seidel, Berlin-Zehlendorf, Germany, to Novopan Studiengesellschaft zur Herstellung besseren and billigeren Brotes m.b.H., Frankfort-am-Main, Germany.

Production insecticide, ovicide, and parasiticide of alginic acid with nicotine alkaloid. No. 2,007,721. Frank Floyd Lindstaedt, Oakland, Cal., to Hercules Glue Co., San Francisco.

Production water insoluble solid insecticide by reacting a volatile alkaloid with rosin. No. 2,007,722. Frank Floyd Lindstaedt, Oakland, Cal., to Hercules Glue Co., San Francisco.

Process coating apparently dry fertilizer granules with finely powdered non-caking material. No. 2,008,469. Alfred John Prince, Norton on Tees, England, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Prevention freezer burns on food stuffs by coating with oil saturated with carbon dioxide. No. 2,009,033. Theodore L. Swenson, Chevy Chase, Md.

Production insecticides of alkali metal or alkaline earth metal salt of sulfuric acid derivative of an alcohol and a hydroxy diaryl reaction product. No. 2,010,443. Robert L. Sibley, Nitro, W. Va., to The Rubber Service Laboratories Co., Akron, Ohio.

Production light stable insecticide of mineral oil, oil soluble extract of pyrethrum, and a substituted amino anthraquinone. No. 2,011,428. Vanderveer Voorhees, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Process inhibiting discoloration of fruits and vegetables by use of sulfhydryl compound. No. 2,011,465. Arnold K. Balls and Walter S. Hale, Washington, D. C., dedicated to free use of the Public.

Production insecticide or fungicide containing aliphatic hydrocarbon sulfonated oxygen derivatives and small amount organic toxic material. No. 2,011,765. Marcus T. Inman, West Nyack, N. Y., to Clarence P. Byrnes, Sewickley, Pa., trustee.

Cellulose

Colloidizing of mixed esters of cellulose with the alkylene halides. No. 2,006,362. Carl J. Malm to Eastman Kodak Co., both of Rochester, N. Y.

Reduction swelling capacity of regenerated cellulose by heating with alcohol-water mixture, then drying. No. 2,006,661. Julius Voss to Kalle & Co., both of Wiesbaden-Biebrich, Germany.

Production furfural from cellulose and cellulose containing materials by subjecting acid-treated material to sulfur dioxide. No. 2,008,006. Alexander Classen, Aachen, Germany, to Arthur H. Fleming, Pasadena, Cal.

Process making cellulose derivative from cellulose fibers by treating unbeaten, non-mercerized, water-wet fibers with a dehydrating liquid. No. 2,008,021. William H. Kenety, Cloquet, Minn., to Cellovis, Inc., Chicago.

Production vulcanized fiber by hydrating fibrous cellulose. No. 2,008,432. John K. Anthony, Cleveland Heights, Ohio, to Horace B. Fay, Cleveland, Ohio.

Manufacturing method producing cellulose viscose collapsible tube. No. 2,008,487. Arthur B. Blount, St. Louis, Mo.

Combining a cellulose ester, solvent, and phosphoric acid to form lacquer, enamel base solution, etc. No. 2,008,641. Carl B. Gilbert, South Amboy, N. J., to Hercules Powder Co., Wilmington, Del.

Production composition containing cellulose acetate and benzoylbenzoate. No. 2,008,716. Emmette F. Izard, Elsmere, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preventing adhesion of films on thin, flexible, non-fibrous, cellulose hydrate sheet by coating with a glycerin, sodium silicate, lime salt solution. No. 2,008,815. Jacques Edwin Brandenberger, Neuilly, and Paul Vanet, Le Vesinet, France, to Du Pont Cellophane Co., Inc., N. Y. City.

Defibrating ligno-cellulose material. No. 2,008,892. Arne Johan Arthur Asplund to Aktiebolaget Defibrator, both of Stockholm, Sweden.

Process improving fastness of colorations on cellulose acetate using colorless basic aralkylated aromatic amino compounds. No. 2,008,902. George Holland Ellis, Tobias Ockman, and Henry Charles Olpin, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production composition containing cellulose acetate and the butyl ether of diethylene glycol monoacetate. No. 2,008,976. Stewart J. Carroll to Eastman Kodak Co., both of Rochester, N. Y.

Wrapping material of cellulose ester sheet, and surface of mixed cellulose organic ester coating. No. 2,008,984. William O. Kenyon and Russel H. Van Dyke to Eastman Kodak Co., all of Rochester, N. Y.

Production phosphorus-containing cellulose derivative by reacting cellulosic material with acid chloride of a phosphoric acid ester. No. 2,008,986. Carl J. Malm and Charles R. Fordyce to Eastman Kodak Co., all of Rochester, N. Y.

Process colloidizing cellulose acetate with ethylene chloride. No. 2,008,995. Cyril J. Staud and Louis M. Minsk to Eastman Kodak Co., all of Rochester, N. Y.

Composition comprising finely divided diatomaceous earth and cellulose acetate. No. 2,009,600. Manuel R. Ximenez, Plainfield, N. J., to Johns-Manville Corp., N. Y. City.

Process for weighting organic cellulose derivatives. No. 2,010,065. Camille Dreyfus, N. Y. City, and Herbert Platt, Cumberland, Md., to Celanese Corp. of America, a corp. of Del.

Production cellulose esters by precipitation from solution. No. 2,010,111. George Schneider, Montclair, N. J., to Celanese Corp. of America, a corp. of Del.

Production tubular bodies from cellulose or cellulose compound solutions. No. 2,010,207. Charles Fred Topham, Earlsdon, Coventry, Edward Hazeley, Brookside, Coventry, and Eric Andrew Morton, Coventry, England, to Courtaulds Ltd., London, England.

Process treating cellulose xanthogenates or xanthic acids with aliphatic carboxylic acid anhydrides to produce cellulose esters. No. 2,010,607. Andreas Ruperti to firm of Society of Chemical Industry in Basle, both of Basel, Switzerland.

Production wetproof cellulose products by reacting crude cellulose with formaldehyde and nitric acid. No. 2,010,635. Julius Kantorowicz, Breslau, Germany.

Esterifying cellulose with alkali to produce alkali cellulose. No. 2,010,818. Frederick C. Hahn to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Production cellulose acetate by treating cellulose with bath of fatty acid, ethylene chloride, and fatty acid anhydride. No. 2,010,822. Carl J. Malm to Eastman Kodak Co., both of Rochester, N. Y.

Production mixed organic cellulose esters by acetylating cellulose in presence of methylene and ethylene chlorides, propylene chloride, chlorethyl acetate, and 1-4 dioxan. No. 2,010,829. Cyril J. Staud and Charles L. Fletcher to Eastman Kodak Co., all of Rochester, N. Y.

Production partially etherified aliphatic ethers of cellulose. No. 2,010,850. Henry Dreyfus, London, England.

Treating cellulose viscose solutions with water soluble cyanide. No. 2,011,227. Robert W. Maxwell, Wilmington, Del., to Du Pont Rayon Co., N. Y. City.

Production cellulose nitrate sheeting using acetone solvent. No. 2,011,354. Emmett K. Carver and Clarence L. A. Wynd to Eastman Kodak Co., all of Rochester, N. Y.

Flexible pipe from cellulosic substance. No. 2,011,781. Giacinto Tabozzi, Milan, Italy.

Production cellulose solution containing titanium oxide and dispersing agent of sodium pyrophosphate. No. 2,012,232. Emil Kline, Buffalo, and Henry W. Barlow, Kenmore, N. Y., to Du Pont Rayon Company, N. Y. City.

Chemical Specialties

Production stable emulsions of clear type for use as wetting and penetrating agent. No. 2,006,557. Samuel Lenher and Charles T. Mentzer, Jr., to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Process for making margarine. No. 2,006,798. Albert Kuba Epstein, Marvin C. Reynolds, and Benjamin Harris, all of Chicago.

Development photographic images with conversion from negative to positive. No. 2,006,834. Walter Kleist, Munich, Germany, to the firm Otto Perutz, Trockenplatten-fabrik Munchen G.m.b.H., Munich, Germany.

Stabilization emulsified food products. No. 2,007,218. William Seltzer, Passaic, N. J., to Kraft-Phenix Cheese Corp., Chicago.

Production multicolor screen for photographic color pictures by sensitizing a colloid layer with silver bromide. No. 2,007,282. Franz Hubert Muller to Durkopp-Werke A.-G., both of Bielefeld, Germany.

Production two-color or multicolor photographic pictures. No. 2,007,283. Franz Hubert Muller to Durkopp-Werke A.-G., both of Bielefeld, Germany.

Production flavoring and coloring extract. No. 2,007,727. Earl B. Putt, N. Y. City.

Fumigation system comprising volatilization of liquid carbon dioxide and ethylene oxide from common container. No. 2,007,738. John M. Baer, Chicago, to The Guardite Corp., a corp. of Ill.

Production soap containing hard soap and pine oil. No. 2,007,974. Charles E. Kaltenbach, Cranford, N. J.; Herman Muhlenbrock, Juana C. Kaltenbach, and Roger W. Aldrich, executors of said Charles E. Kaltenbach, deceased.

Production emulsion for making magnesia cement. No. 2,008,034. Fred Ottman, Jersey City, N. J.

Separation of emulsifiable aromatic nitro-compounds from acid solution by adding insoluble absorbent silicious material. No. 2,008,045. Kenneth Carl Simon, Woodbury, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production sensitized photographic emulsions. No. 2,008,450. Isidor Morris Heilbron and Francis Irving, Liverpool, England, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production three-colored photographic film. No. 2,007,457. Paul Emmanuel Francois Lessertisseux, Paris, France.

Increasing wetting-out power of alkaline lyes by adding phenols and non-acylated nitrogen-containing organic bases. No. 2,008,458. Heinrich Lier to Chemical Works Formerly Sandoz, both of Basel, Switzerland.

Increasing wetting-out power of alkaline lyes by addition of phenols and ketones. No. 2,008,459. Heinrich Lier to Chemical Works Formerly Sandoz, both of Basel, Switzerland.

Production emulsifiable wax composition of a hard wax. No. 2,009,345. Walther Schrauth, Berlin-Dahlem, Germany, to "Unichem" Chemikalien Handels A.-G., Zurich, Switzerland.

Varnish and lacquer remover of cracked isopropyl alcohol and acetone, small quantity petroleum hydrocarbon wax, and a metallic soap. No. 2,009,357. Carleton Ellis, Montclair, N. J., to Chadeloid Chemical Co., N. Y. City.

Production cosmetic preparation by reacting ground wood fiber with water and caustic, and emulsifying prepared solution. No. 2,009,394. Hans Werner Fiedler, Leipzig, Germany.

Production transparent liquid petroleum soap by emulsifying light petroleum distillate with alkali metal silicate and adding essential oil. No. 2,009,413. Fred H. Relyea, Boston, Mass.

Production wax emulsion for paper sizing of corn oil, soap, water, mixed with starch and paste then mixed with wax and diluted. No. 2,009,488. Arthur M. French to A. E. Staley Mfg. Co., both of Decatur, Ill.

Production plaster bandage using paste of finely ground native gypsum, a liquid, and a binding agent. No. 2,009,597. Harry M. Weber, Newton, Mass.

Production emulsion polishing composition of wax, oil solvent, water, and salt of an alcohol sulfuric acid ester. No. 2,009,633. Louis Friedrich Wilhelm Pape, Dusseldorf-Benrath, Germany, to "Unichem" Chemikalein Handels A.-G., Zurich, Switzerland.

Production films in natural color. No. 2,009,689. William T. Crespinel, Los Angeles, Cal., to Hughes Industries Co., Ltd., a corp. of Del.

Production laundry starch containing an alkali-metal-hexa-metaphosphate. No. 2,009,692. Ralph E. Hall, Mount Lebanon, Pa., to Hall Laboratories, Inc., Pittsburgh, Pa.

Production dry cleaning agent of carbon tetrachloride and a trichlorpropane. No. 2,010,038. William E. Sharp, Chicago; Minnie E. Sharp, executrix of the estate of said William E. Sharp, deceased.

Production liquid polishing wax of carnauba, ceresin, Montan, and beeswax with heavy metal soap. No. 2,010,297. Marcellus T. Flaxman, Wilmington, Cal., to Union Oil Co. of Cal., Los Angeles.

Production photographic emulsion of varying sensitivities. No. 2,010,388. Olaf Bloch to Ilford Ltd., both of Ilford, England.

Process of coloring emulsions. No. 2,010,436. John A. E. McClave, Grantwood, and Dudley H. Grant, Watchung, N. J., to Stanco Inc., a corp. of Delaware.

Production dental cleaning compound of Bayer process alumina. No. 2,010,910. Malcolm W. Atkins, Worcester, Mass.

Production cheese emulsifying agent containing mixture of gluconolactone and a non-poisonous soluble salt. No. 2,011,074. Richard Pasternack and Richard W. Burnham to Charles Pfizer & Co., all of Brooklyn, N. Y.

Method stabilizing silver halide photographic emulsions using diphenyl and triphenyl amines and their derivatives. No. 2,011,669. Walther Zehlke, Berlin, Germany, to Agfa Ansco Corp., Binghamton, N. Y.

Production printing thickener containing prepared gum solution of calcium. No. 2,011,728. Arnold Pfister, Clifton, N. J.

Production stencil paste using polyhydric alcohol-polybasic acid resin, dilute soap solution, drier, and pigment. No. 2,011,898. John W. Iliff, Ridley Park, Paul Robinson, Llanerch, and Wilmer Whitescarver, Rutledge, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Coal Tar Chemicals

Preparation vinyl phenols by reacting a vinyl halide with a phenol in presence of acidic condensing agent. No. 2,006,517. George W. Seymour, Cumberland, Md., to Celanese Corp. of America, a corp. of Del.

Fluid paste of anthraquinone compounds. No. 2,006,720. Donald G. Rogers, Hamburg, N. Y., to National Aniline & Chemical Co., N. Y. City.

Production nitro-aryl-amino-aryl amines. No. 2,006,735. Erich Fischer, Bad Soden-am-Taunus, and Emil Mahler, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., N. Y. City.

Producing phenol by monosulfonating benzene done by adding benzene in liquid sulfur dioxide, and sulfur trioxide in sulfur dioxide, to large volume liquid sulfur dioxide. No. 2,007,327. James Irvin Carr, Miles Augustinus Dahlen and Emmet Francis Hitch to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Preparation sulfuric reaction products of aliphatic hydroxy carboxylic acids. No. 2,007,492. Heinrich Bertsch to the firm H. Th. Bohme Aktiengesellschaft, both of Chemnitz, Germany.

Production alpha, alpha gamma, gamma tetramethyl butyl phenols by densing a phenol with diisobutylene, and concentrated sulfuric acid. No. 2,008,017. William F. Hester, Drexel, Pa., to Rohm & Haas, Philadelphia.

Production alpha alpha gamma gamma tetramethyl butyl phenols by reacting phenol with diisobutylene and kationoid condensing agent. No. 2,008,032. Joseph B. Niederl, Brooklyn, N. Y., to Rohm & Haas Co., Philadelphia.

Production 1, 4-diamino-anthraquinone-2, 3, X-trisulfonic acids. No. 2,008,056. Fritz Baumann, Leverkusen-I. G. Werk, Germany, to General Aniline Works, Inc., N. Y. City.

Production liquid anthelmintics of an organic carboxylic acid salt of a fatty acid basic derivative and a liquid of anthelmintic effect. No. 2,008,238. Max Bockmuhl, Robert Knoll, and Oskar Wagner, Frankfort-am-Main, Germany, to Winthrop Chemical Co., Inc., N. Y. City.

Production carboxylic acids by reacting a gaseous mixture of olefinic hydrocarbon, carbon monoxide, and steam, using a solid acidic oxide catalyst. No. 2,008,348. Gilbert B. Carpenter, Bellemoor, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production amino derivatives of polycyclic organic compounds. No. 2,009,064. Walter Mieg, Opladen, Rudolf M. Heidenreich, Leverkusen-I. G. Werk, and Heinrich Neresheimer, Ludwigshafen, Germany, to General Aniline Works, Inc., N. Y. City.

Production naphthalene-1, 4, 5, 8-tetracarboxylic acids and derivatives of same. No. 2,009,596. Heinrich Vollmann and Martin Corell, Frankfort-am-Main, Germany, to General Aniline Works, Inc., N. Y. City.

Coatings

Improved process making die to reproduce natural wood grain. No. 2,006,380. Paul R. Zinser to Woodall Industries, Inc., both of Detroit.

Improving a copal gum by heating and subsequent mastication to increase gum solubility in varnish solvents and neutralization reactivity. No. 2,007,333. Wilhelm Krumbhaar, Detroit.

Coloring sheeted asbestos cement composition material. No. 2,007,411. Karel Sticha, Hradec Kralove, Czechoslovakia.

Mortar waterproofing compound containing barium sulfate, quick lime, ground silicon dioxide, aluminum silicate, water glass, colloidal silicic acid, a fluate, all in fine powder form. No. 2,007,427. Bernard Heimann, Datteln, Germany.

Liquid paint composition of crude rubber, solvent naphtha, petroleum, turpentine, linseed oil, China wood oil, kauri gum, ester gum, manganese borate, zinc sulfate, and red lead. No. 2,007,802. Siegmund Jacobs, Comstock, Mich.

Production hard rubber coatings on metal surfaces. No. 2,008,028. Willett J. McCortney, Royal Oak, and Edgar L. Bailey, Birmingham, Mich., to Chrysler Corp., Detroit.

Production jelly-like paste for fingerpainting comprising wheat flour, water, honey, glycerine, and insoluble pigment. No. 2,008,043. Ruth Faison Shaw, N. Y. City.

Production shellac substitute of oxidized furfural-soluble resin. No. 2,008,103. Julius Hyman to Velsicol Corp., both of Chicago.

Production photographic film and laminated protective coating used with it. No. 2,008,435. Mary Helen Caruso, Woodside, N. Y.

Coating flakes of alkali meta or pyrophosphates with mixtures of alkali metal carbonates and orthophosphates. No. 2,008,651. Robert E. Zinn, Chicago Heights, Ill., to Victor Chemical Works, Chicago, Ill.

Production coating composition containing pigment and synthetic drying oil which is a liquid polymer of an unsaturated non-benzenoid hydrocarbon. No. 2,008,746. Arnold Miller Collins to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Method of coating metal with concentrated di-potassium phosphate solution. No. 2,008,939. John L. Tufts, Worcester, Mass.

Production coating composition of frangible, acetone soluble sulfonated hardwood pitch, a solvent, drying oil, and softening agent. No. 2,008,979. Louis J. Figg, Jr., Kingsport, Tenn., to Eastman Kodak Co., Rochester, N. Y.

Production composition for use on heated rubber shaping or plastic shaping surfaces. No. 2,009,028. Robert L. Sibley, Nitro, W. Va., to The Rubber Service Laboratories Co., Akron, Ohio.

Production friction facings by saturating fibrous material with aqueous solution of phenolic condensate and sodium cyanide. No. 2,009,207. Adolph Rosner to Bendix Brake Co., both of South Bend, Ind.

Production coating material comprising 100 pts. by weight rubber solution, 30 rubber, 15 adhesive ester gum, 3 liquid petroleum, 100 zinc oxide. No. 2,009,776. Alfred L. Kronquest and Samuel C. Robison, Syracuse, N. Y., to Continental Can Co., Inc., N. Y. City.

Production liquid coating material of rubber, zinc oxide, adhesive ester gum, plasticizer, sulfur, vulcanization accelerator, antioxidant, and solvent. No. 2,009,777. Alfred L. Kronquest and Samuel C. Robison, Syracuse, N. Y., to Continental Can Co., Inc., N. Y. City.

Production coating material of rubber milled with zinc oxide, and adhesive ester gum and plasticizer. No. 2,009,778. Alfred L. Kronquest and Samuel C. Robison, Syracuse, N. Y., to Continental Can Co., Inc., N. Y. City.

Production purified bauxite for use in protecting paints by purifying with dilute hydrochloric acid. No. 2,009,807. Andor Kutas to the firm Victoria Vegyeszeti Muvek R. T., both of Budapest, Huncary.

Production liquid coating composition of a cellulose derivative and a varnish gum or resin in carboxylic acid ester solution. No. 2,009,951. Jacob N. Wickert, Charleston, W. Va., to Carbide & Carbon Chemicals Corp., a corp. of N. Y.

Production synthetic varnish composition comprising a lower trialkyl phosphate, a synthetic resin, and volatile solvent. No. 2,010,123. John C. Woodruff, Terre Haute, Ind., to Resinox Corp., N. Y. City.

Production shellac composition containing dicyandiamides. No. 2,010,224. William Howlett Gardner, N. Y. City, to U. S. Shellac Importers Association, Inc., a corp. of N. Y.

Production shellac-sulfanilic acid composition. No. 2,010,225. William Howlett Gardner, N. Y. City, to U. S. Shellac Importers Association, Inc., a corp. of N. Y.

Production composition for molding and protective coatings comprising shellac and alpha-orthotolybiguanide. No. 2,010,226. William Howlett Gardner, N. Y. City, to U. S. Shellac Importers Association, Inc., a corp. of N. Y.

Production shellac composition containing a polycarboxylic organic acid or its anhydride. No. 2,010,227. William Howlett Gardner, N. Y. City, to U. S. Shellac Importers Association, Inc., a corp. of N. Y.

Production acid resistant vitreous enamel composition. No. 2,010,776. John G. G. Frost to The Vitreous Enameling Co., both of Cleveland, Ohio.

Production metal coatings on celluloid substitutes using swelling agent containing an aromatic amine reducing agent. No. 2,010,805. Max Ow-Eschingen, Vienna, Austria.

Production coating on base materials by baking. No. 2,010,857. Norman D. Hanson, Bloomfield, N. J., to Bakelite Corp., N. Y. City.

Production liquid coating composition of condensate resin, chlorinated diphenyl, and volatile solvent. No. 2,011,042. Henry A. De Phillips, Jackson Heights, N. Y.

Process coating with molten metal. No. 2,011,135. Arthur O. Austin, near Barberton, Ohio, to The Ohio Brass Co., Mansfield, Ohio.

Production enamel lacquered wire using lacquer of phenolformaldehyde resin and tricresyl phosphate, dissolved in triacetin. No. 2,011,213. Alfred Ehrenzweig, Wurenlos/Aargau, Switzerland.

Dyes, Stains, etc.

Dyeing or coloring ester or ether containing material by applying acetoacetyl coupling components in free state. No. 2,006,545. George Holland Ellis and Henry Charles Olpin, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Dyeing or coloring cellulose ester and ether containing material by applying diazo compound, then acetoacetyl coupling. No. 2,006,546. George Holland Ellis, and Henry Charles Olpin, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production water-insoluble azo dyestuffs by coupling aromatic diazo compound and an ortho-hydroxy-carboxylic acid. No. 2,006,740. Hans Krzikalla, Ludwigshafen-am-Rhine, Bernhard Eistert, Mannhein, Robert Schmitt, Darmstadt, and Herbert Kracker, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., N. Y. City.

Production thioindigoid dyestuffs. No. 2,007,094. Jakob Muller, Munchenstein, near Basel, and Robert Stocker, Basel, Switzerland, to firm of Society of Chemical Industry in Basle, Basel, Switzerland.

Production aqueous dispersions of polymorphous azo dyestuffs. No. 2,007,382. Tobias Ockman, George Reeves, Edmund Stanley, Henry Charles Olpin, and George Holland Ellis, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production of aqueous dispersion of readily flocculating dyestuffs. No. 2,007,386. Edmund Stanley, Henry Charles Olpin, and George Holland Ellis, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production color concentrate by boiling bentonite with alcoholic dye solution. No. 2,007,980. Henry T. Neumann, to Henry T. Neumann Research, Inc., both of N. Y. City.

Graining ink comprising pigment which simulates color of wood dispersed, non-aqueous, resin containing vehicle. No. 2,008,018. Charles B.

Hemming, Parlin, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production anthraquinone-acridone dyestuffs. No. 2,008,157. William Smith, James Primrose, and John Thomas, Grangemouth, Scotland, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production azo dyestuffs. No. 2,008,346. Gerald Bonhote to the firm Society of Chemical Industry in Basle, both of Basel, Switzerland.

Production chromiferous azo-dyestuffs. No. 2,008,601. Fritz Straub, Basel, and Hermann Schneider, Riehen, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Process dyeing leather using complex metal compounds of certain mono-azo-dyestuffs. No. 2,008,602. Fritz Straub and Hans Mayer to Society of Chemical Industry in Basle, all of Basel, Switzerland.

Production iron-tannic acid writing ink containing gall nuts, aniline blue, ferrous chloride, glycerine, concentrated hydrochloric acid, arsenic acid, water, phenol. No. 2,008,620. William Boast Marshall, London, England.

Production azo coloring matters on textile materials. No. 2,008,691. George Holland Ellis, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production vat dyestuff of isodibenzanthrone azole series. No. 2,008,738. Alexander J. Wuertz, Carrollville, and Myron S. Whelen, Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production selenium containing vat dyestuff of the isodibenzanthrone series. No. 2,008,739. Alexander J. Wuertz, Carrollville, and Myron S. Whelen, Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production of fast shades on textile fibers. No. 2,008,766. Mordecai Mendoza, West Didsbury, and Wilfred Archibald Sexton, Huddersfield, England, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production anthraquinone dyestuffs. No. 2,008,796. Albin Peter to firm of Chemical Works formerly Sandoz, both of Basel, Switzerland.

Process and composition for applying and fixing dyestuffs. No. 2,008,966. Donald H. Powers, Moorestown, N. J., and Harold W. Stiegler, Bristol, Pa., to Rohm & Haas Co., Philadelphia.

Production of fiber-dyeing water-insoluble azo dyestuff. No. 2,009,058. Arthur Zitscher, Offenbach-am-Main, Germany, to General Aniline Works, Inc., N. Y. City.

Production water-insoluble azo-dyestuff and fiber dyed therewith. No. 2,009,063. Leopold Laska and Arthur Zitscher, Offenbach-am-Main, Germany, to General Anilifie Works, Inc., N. Y. City.

Preparation of an azo dye. No. 2,009,397. Richard Frank Goldstein, Prestwich, England, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production yellow azo-dyestuff capable of being chromed. No. 2,009,611. Erich Fischer, Bad Soden-am-Taunus, and Walter Gmelin, Frankfort-am-Main, Germany, to General Aniline Works, Inc., N. Y. City.

Production chromiferous dyestuffs from preformed and separated ortho-hydroxyazo-dyestuffs chromium compounds. No. 2,010,613. Fritz Straub, Basel, and Hermann Schneider, Riehen, near Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Production azo dyestuffs. No. 2,010,746. Gerald Bonhote and Jakob Danuser to firm Society of Chemical Industry in Basle, all of Basel, Switzerland.

Production of dischargeable blacks on organic cellulose derivatives. No. 2,010,854. George Holland Ellis and Henry Charles Olpin, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Coloring of cellulose acetate materials using 3-nitro-4-amino-diphenyl. No. 2,010,883. Henry Charles Olpin and George Holland Ellis, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production of dyestuffs by coupling a diazo compound with unsulfonated phenolic coupling components. No. 2,010,884. Henry Charles Olpin and George Holland Ellis, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Production acid dye. No. 2,010,921. Werner Lange, Dessau-Ziebigk in Anhalt, Germany, to General Aniline Works, Inc., N. Y. City.

Production dyestuffs by separating mixtures of isomeric vat dyestuffs of 1,4,5,8,-naphthoylene diarylimidazole series. No. 2,011,807. Wilhelm Eckert and Walter Gmelin, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., N. Y. City.

Production black dyeing sulfur dyestuff by sulfurizing diarylamines. No. 2,012,094. Hermann Bots and Ernst Dur to Society of Chemical Industry in Basle, all of Basel, Switzerland.

Production water-insoluble monoazodyestuffs from a diazo-compound of an ortho-nitraniline. No. 2,012,096. Achille Conzetti to firm J. R. Geigy S. A., both of Basel, Switzerland.

Explosives

Ignition composition of nitrocellulose impregnated with liquid explosive nitric ester. No. 2,007,223 Charles P. Spaeth, Woodbury, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production thermally fired igniter charge for detonating cap, comprising zirconium. No. 2,008,366. Oscar A. Pickett to Hercules Powder Co., both of Wilmington, Del.

Production explosive composition of liquid explosive, a gelatinizing agent, a combustible absorbent material, and an alkaline, water soluble, inorganic phosphate. No. 2,008,808. Vernon Harcourt Williams, Ardrossan, Scotland, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production propellant powder grain of ungelatinized nitro-cellulose surface-treated with diamyl-phthalate. No. 2,008,888. William E. Wagner, Alton, Ill., to Western Cartridge Co., East Alton, Ill.

Production propellant powder grain of nitrocellulose with a gelatinizer and dialkyl phthalate. No. 2,008,889. William E. Wagner, Kilworthy, Ontario, Canada, to Western Cartridge Co., East Alton, Ill.

Priming mixture of guanylnitrosaminoguanyltetrazene and diazodinitrophenol. No. 2,009,556. Joseph D. McNutt, New Haven, Conn., to Winchester Repeating Arms Co., a corp. of Maryland.

Production diazodinitrophenol in free flowing form by diazotizing a picramate. No. 19,645—reissue. Roy S. Hancock, Cambridge, Mass., and Leslie C. Pritchett, Kenvil, N. J., to Hercules Powder Co., Wilmington, Del.

Production explosive containing ethylenedinitramine. No. 2,011,578. George C. Hale, Dover, N. J.

Explosive for blasting deep well holes. No. 19,647—reissue. John M. Jefferies to Atlas Powder Co., both of Wilmington, Del.

Fine Chemicals

Production benzoyl halides by reacting fluid phthallic anhydride with dry hydrogen halide with a decarboxylating catalyst. No. 2,006,335. Courtney Conover, St. Louis, Mo., to Monsanto Chemical Co., a corp. of Del.

Production insoluble anhydrite of calcium sulfate by seeding with insoluble anhydrite. No. 2,006,342. James E. Booge, Newark, N. J., Robert M. McKinney, Linthicum Heights, Md., and Roy W. Sullivan, Richardson Park, Del., to Krebs Pigment and Color Corp., Newark, N. J.

Use of a secondary alkyl ester of a polycarboxylic acid as heat transmitting agent. No. 2,006,411. Ludwig Rosenstein to Shell Development Co., both of San Francisco.

Production sulfurized indophenols by treating halogenated indophenols and leuco indophenols with a sulfurizing agent. No. 2,006,514. Paul Schick and Heinrich Lauth, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., N. Y. City.

Production nitro-amino-alkoxy-diphenyl by reduction of one nitro group in 4, 4'-dialkoxy-3, 3'-dinitro-diphenyl with alkali metal sulfide. No. 2,006,538. Samuel Coffey and Keith William Palmer, Huddersfield, England, to Imperial Chemical Industries, Ltd., a corp. of Great Britain.

Production aliphatic anhydride by subjecting aliphatic acid vapor to thermal decomposition in presence of a phenol or a phenol aliphatic ester. No. 2,006,541. Henry Dreyfus, London, England.

Production esters of polycarboxylic acids. No. 2,006,555. Emmette F. Izard, Elsmere, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Purification of monohydroxyphenol by oxidation of impurities, subsequent reduction, and separation. No. 2,006,589. Karl Henry Engel, West Englewood, N. J., to The Barrett Co., N. Y. City.

Production soluble salts of barbituric acid. No. 2,006,610. Donalee L. Tabern and Norman A. Hansen, Lake Bluff, Ill., to Abbott Laboratories, North Chicago, Ill.

Production vitamin containing material. No. 2,006,699. George C. Supplee and George E. Flanigan, Bainbridge, N. Y., to The Borden Co., N. Y. City.

Production vitamin free casein by treating finely divided casein with highly ionized salt solution. No. 2,006,700. George C. Supplee, George E. Flanagan, and Raymond C. Bender, Bainbridge, N. Y., to The Borden Co., N. Y. City.

Production acid inhibitor by reacting an aliphatic aldehyde and carbon disulfide with mixture polyamines and monoamines. No. 2,006,710. Frederick Baxter Downing, Carneys Point, N. J., and Richard Gesse Clarkson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production indoles by heating together in inert organic liquid an alkali metal and an ortho-alkyl-aryl-amide. No. 2,006,718. Henry Alfred Piggott and Ernest Harry Rodd, Blackley, Manchester, England, to Imperial Chemical Industries Ltd., Westminster, England.

Production esterified olefines by heating organic carboxylic acid with an olefine in presence of condensing catalyst. No. 2,006,734. Karl R. Edlund and Theodore Evans, Berkeley, Cal., to Shell Development Co., San Francisco.

Production thioureas by mixing alkaline earth salt of cyanamide, water, and hydrogen sulfide. No. 2,006,762. Alphonse Gams and Werner Merki, Basel, Switzerland, to Ciba Products Corp., Dover, Del.

Process for hydrophilous fatty substances. No. 2,006,766. Richard Hueter, Villa Waldfrieden, Rosslau-Anhalt, Germany, to "Unichem" Chemikalien Handels, A.-G., Zurich, Switzerland.

Production acetic anhydride by pyrolytic decomposition of acetic acid with asbestos-copper compound catalyst. No. 2,006,787. Ernst Berl, Darmstadt, Germany.

Production dispersion products by condensing aldehyde with sulfonation product of phenol and ester-like mixture. No. 2,006,934. Edmond Tassel, Villers St. Paul, France, to Com. Nationale de Matieres Colorantes et Manufactures de Produits Chimiques du Nord Reunies, Etablissements Kuhlmann, Paris, France.

Process making aliphatic alcohols by subjecting isomeric olefins to absorption treatment with mineral polybasic acid. No. 2,006,942. Lee H. Clark, Grosse Ile, and Frank J. Worster, Belle, W. Va., to The Sharples Solvents Corp., Philadelphia, Pa.

Production hydrocyanic acid by passing ammonia and a volatile organic compound together over hot oxidation catalyst. No. 2,006,981. Leonid Andrussow, Mannhein, Germany, to I. G., Frankfort-am-Main, Germany.

Production salol by reacting salicylic acid with thionyl chloride in presence of trace aluminum chloride and reacting product with phenol. No. 2,007,013. Micheal N. Dyornikoff, St. Louis, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Production antimony compounds by reacting antimony hydroxide in aqueous solutions of alkali metal salts of mono-carboxylic acid. No. 2,007,092. Walter Kussmaul to the firm Chemical Works Formerly Sandoz, both of Basel, Switzerland.

Production ethylidene chloride by reacting hydrogen chloride with vinyl chloride in presence of catalyst. No. 2,007,144. Howard S. Nutting, Peter S. Petrie, and Myron E. Huscher to Dow Chemical Co., all of Midland, Mich.

Purification salicylo-salicylic acid by dissolving in aqueous solution ammonia, ammonium carbonate, or ammonium bicarbonate. No. 2,007,147. Wesley C. Stoesser and Andrew J. Dietzler to Dow Chemical Co., all of Midland, Mich.

Recovery free alkylolamine from alkylolamine soaps by distillation. No. 2,007,166. Walter J. Hund and Ludwig Rosenstein, San Francisco.

Production chlorohydrin by reacting an unsaturated organic compound with atomized aqueous solution of free hypochlorous acid and hydrochloric acid. No. 2,007,168. Carl T. Kautter, Berkeley, Calif., to Shell Development Co., San Francisco.

Production anhydrous amine hydrochloride by passing amine vapor into dry hydrogen chloride gas. No. 2,007,189. Arthur Lawrence Fox to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Production aniline hydrohalide by reacting aniline vapor and a hydrogen halide. No. 2,007,199. Lee Cone Holt, Edgemoor, and Herbert Wilkens Daudt, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production halo-fluoro derivatives of aliphatic hydrocarbons. No. 2,007,208. Thomas Midgley Jr., Worthington, Albert L. Henne, Columbus, and Robert Reed McNary, Dayton, Ohio, to General Motors Corp., a corp. of Del.

Production musk-ambrette by nitration of tert-butyl-3-methoxy-toluene. No. 2,007,234. Walter V. Wirth, Woodstown, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Recovery musk-ambrette after nitration by extraction with non-aromatic liquid hydrocarbon. No. 2,007,241. Miles A. Dahlen, Wilmington, Del., and Walter V. Wirth, Woodstown, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production ethyl chloride by reacting ethyl alcohol with anhydrous liquified hydrogen chloride in pressure tight vessel. No. 2,007,322. Hans Aickelin, Summit, N. J., to General Aniline Works, Inc., N. Y. City.

Production 0-amino-aryl-mercaptans by reacting an aryl amino thiazole with aqueous solution of 3 mols caustic per mol aryl-amino-thiazole. No.

2,007,335. Herbert A. Lubs, John E. Cole, and Arthur L. Fox to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Production organic iodine compounds by artificially promoting assimilation and accumulation of iodine in organs of living shell-fish. No. 2,007,479. Pierre Max Raoul Salles, Cauderan, and Mathieu Rene Loubatie, Arcachon, France.

Production of mercury derivatives of gallein and coerulein by substituting HgOH for hydrogen atom on ring carbon. No. 2,007,582. Bernard Nelson, N. Y. City.

Production polymethylenediguanidine compounds. No. 2,007,770. Erich Prochnow, Berlin-Steglitz, Germany, to Anticoman G.m.b.H., Berlin, Germany.

Stabilization calcium gluconate solutions by adding boron compound to help form stable concentrated aqueous calcium solution. No. 2,007,786. James A. Austin to Jensen-Salsbery Laboratories, Inc., both of Kansas City, Mo.

Production of gamma lactones. No. 2,007,813. Georg Scheuing and Bruno Walach to C. H. Boehringer Sohn Aktiengesellschaft, all of Nieder-Ingelheim-am-Rhine, Germany.

Production nitrogen containing cellulose derivatives by reacting hydroxy-substituted cellulose derivative with a basic compound of ammonia type. No. 2,007,950. Henry Dreyfus, London, England.

Production modified, bodied products from fatty oils. No. 2,007,958. Laszlo Auer, Budapest, Hungary, to J. Randolph Newman, Washington, D. C.

Production casein by extracting soya bean meal with alkali and treating extract with an acid to precipitate casein. No. 2,007,962. David N. Burruss, Jr., St. Louis, Mo., and John P. Ruth, Collinsville, Ill., to Chemical & Pigment Co., Inc., Collinsville, Ill.

Esterification of compound of mono-hydric C-OH type by contacting with a ketene and catalytic amount of strong acid. No. 2,007,968. George De Witt Graves to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Condensation product of diisobutylene and polyhydric phenols. No. 2,008,337. Jack D. Robinson, Buchanan, Mich., and William F. Hester, Drexel Hill, Pa., to Rohm & Haas Co., Philadelphia, Pa.

Production useful products by Friedel-Crafts reaction. No. 2,008,418. Philip H. Groggins, Washington, D. C., to Sec. of Agriculture of the U. S. A.

Production phosphoric acid esters of aliphatic alcohols. No. 2,008,478. Byron M. Vanderbilt and Hans B. Gottlieb, Chicago Heights, Ill., to Victor Chemical Works, a corp. of Ill.

Polymerization of diolefines with an alkali metal and an unsaturated ether containing an olefinic double carbon bond. No. 2,008,491. Georg Ebert, Friedrich August Fries, and Paul Garbsch, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Production hydrogenated benzo-iso-tetrazoles. No. 2,008,536. Emil Wolf, Budapest, Hungary, to Chinoin Gyogyszer-Es Vegyeszeti Termekek Gyara R. T. (Dr. Kereszty & Dr. Wolf), Uipest, Hungary.

Production aliphatic poly-amides. No. 2,008,649. Heinrich Ulrich and Joseph Neusslein, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Production of a levulinic ester of a monohydric open chain aliphatic alcohol having 7-18 carbon atoms, inclusive. No. 2,008,720. Walter E. Lawson and Paul L. Salzberg to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Production water soluble diazoimino compounds. No. 2,008,750. Miles Augustinus Dahlen to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Production alkali selenides and tellurides by reacting the oxides with a caustic alkali or alkali alcoholate in presence of nascent hydrogen. No. 2,008,753. Frederick B. Downing and Charles J. Pedersen, Carney's Point, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production cinchoninic acid salts of piperazines. No. 2,008,923. Soli Ornstein, one fourth to L. Graham Patmore, both of N. Y. City.

Production diphenyl ether by reacting homogeneous mixture of alkali metal hydroxide solution, chlorobenzene, and phenol, in presence of copper. No. 2,008,987. Karl Marx and Hans Wesche, Dessau in Anhalt, Germany, to Winthrop Chemical Co., Inc., N. Y. City.

Production phenols by reacting halides of benzene vapors with steam in presence of iron free fuller's earth. No. 2,009,023. Walter Prahl to firm Dr. F. Raschig G.M.B.H., both of Ludwigshafen-am Rhine, Germany.

Preparation of solutions of salts of picolinic acid. No. 2,009,043. Miles A. Dahlen and Stanley R. Detrick to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Production substituted amides of aliphatic-aromatic acids. No. 2,009,144. Karl Miescher and Werner Neisel, Riehen, near Basel, and Karl Hoffman, Basel, Switzerland, to "Society of Chemical Industry in Basle," Basel, Switzerland.

Process obtaining opium alkaloids from dried poppy straw. No. 2,009,181. Janos Kabay, Budszentmihaly, Hungary.

Production difficultly dissociable acyl derivatives of salicylic acid. No. 2,009,183. Hans Kaufmann, Munster/Westphalia, Germany.

Production oleaginous solutions of organic salts of bismuth. No. 2,009,295. Paul Emile Charles Goissedet and Robert Ludovic Despois, Choisy-Le-Roi, France, to Societe Des Usines Chimqiues Rhone-Poulenc, Paris, France.

Preparation alkali salt of carboxylic amide sulfonic acid. No. 2,009,346. Erik Schirm, Dessau/Anhalt, Germany, to "Unichem" Chemikalien Handels A.-G., Zurich, Switzerland.

Production diaminostilbene derivatives. No. 2,009,396. Richard Frank Goldstein, Prestwich, England, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production esters polymeric carbohydrates by reacting in absence water a polymerized carbohydrate with an acid halide. No. 2,009,657. Max Hagedorn and Berthold Reyle, Dessau in Anhalt, Germany, to I. G., Frankfort-am-Main, Germany.

Alcohol denaturant comprising liquid hydrocarbon partial oxidation product containing alcohols and aldehydes. No. 2,009,661. Joseph Hidy James, Pittsburgh, Pa., to Clarence P. Byrnes, trustee.

Separation of para-toluidine from mixture with ortho toluidine using sulfur dioxide. No. 2,009,757. William Henry Bentley, Wallasey, and Benjamin Catlow, Oswaldtwistle, England, to William Blythe & Co., Ltd., Holland Bank Chemical Works, England.

Production substituted aminophenols by reducing a Schiff's base of benzene or naphthalene aromatic amino compound with zinc and caustic at low temperatures. No. 2,009,767. Frederick Baxter Downing, Carney's Point, N. J., and Richard Gesse Clarkson and Robert Freeman Deese, Jr., Wilmington, to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production aliphatic alcohols from olefines by hydration over solid catalyst of phosphoric acid, boron, and a metal. No. 2,009,775. Walter Philip Joshua, Cheam, Herbert Muggleton Stanley, Tadworth, and John Blair Dymock, Sutton, England.

Production leucine by hydrolysis of proteins of the gluten, casein, and zein type. No. 2,009,868. Harold M. Barnett, Garfield Heights, Ohio, to S. M. A. Corp., Cleveland, Ohio.

Production unsaturated alcohols by heating an aliphatic unsaturated carbonyl with hydrogen in presence weak hydrogenation catalyst. No. 2,009,948. Otto Schmidt and Karl Huttner, Ludwigshafen-am-Rhine, and Georg Kaeb, Rheingonheim, Germany, to I. G., Frankfort-am-Main, Germany.

Production substituted glycerols. No. 2,009,988. George A. Emerson, San Francisco, Cal., to Eli Lilly & Co., Indianapolis, Ind.

Process reacting a mercapto-benzo-thiazole with a carboxylic acid halide. No. 2,010,000. Marion W. Harman, Nitro, W. Va., to The Rubber Service Laboratories Co., Akron, Ohio.

Production aqueous dispersion of a halogen-2-butadiene-1, 3 and protein. No. 2,010,012. Arnold M. Collins to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Production of a trichlorpropane by treating propane material with chlorine in presence of catalyst and actinic rays. No. 2,010,039. William E. Sharp, Chicago; Minnie E. Sharp, executrix of the estate of said William E. Sharp, deceased.

Production arylaminomethyl thiazyl sulfides by reacting a mercapto-benzothiazole with formaldehyde and a primary aromatic amine. No. 2,010,059. Clyde Coleman, Passaic, N. J., to U. S. Rubber Co., N. Y. City.

Production aliphatic ketone by reacting primary aliphatic alcohol with free oxygen using iron oxide and calcium carbonate catalyst. No. 2,010,066. Henry Dreyfus, London, England.

Treatment of unsaturated alcohols using acid catalyst. No. 2,010,076. Herbert Peter Augustus Groll and Miroslav W. Tamele, Berkeley, Cal., to Shell Development Co., San Francisco.

Production ether acid ester of polyhydric alcohols. No. 2,010,154. Max H. Hubacher, Nitro, W. Va., to Herbert S. Kreighbaum, Akron, Ohio.

Production muscle adenylic acid from animal tissue. No. 2,010,192. Carl Ludwig Lautenschlager and Fritz Lindner, Frankfort-am-Main, Germany, to Winthrop Chemical Co., Inc., N. Y. City.

Production mixed tertiary ethers. No. 2,010,356. Theodore Evans, Oakland, and Karl R. Edlund, Berkeley, Cal., to Shell Development Co., San Francisco.

Production carboxylic acid by oxidation of isoaldehydes. No. 2,010,358. Herbert Peter Augustus Groll and Miroslav W. Tamele, Berkeley, Cal., to Shell Development Co., San Francisco.

Separating isomeric pentanones by reacting mixture with water soluble bisulfite solution. No. 2,010,384. Johannes Andreas van Melsen and Siegfried Leonard Langedijk, Amsterdam, Netherlands, to Shell Development Co., San Francisco.

Selective halogenation of tertiary olefines. No. 2,010,389. Richard M. Deanesly, Berkeley, Cal., to Shell Development Co., San Francisco.

Production carboxylic acids using saturated alcohol compounds, carbon monoxide in presence of ammonium halide, and active carbon. No. 2,010,402. Alfred T. Larson and Walter E. Vail to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Process esterifying an alcohol with an organic carboxylic acid in presence of alkylene dichloride. No. 2,010,426. Joseph P. Burke, Highland Park, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production antiseptic comprising orthohydroxy-quinoline salt and a disazo compound. No. 2,010,512. Joseph Ebert, Westmont, N. J., to The Farastan Co., Philadelphia.

Production oleic acid ester of beta methoxy ethanol. No. 2,010,560. Clayton Olin North, Nitro, W. Va., to Herbert S. Kreighbaum, Akron, Ohio.

Production pickling restrainer by sulfurating a homologue of piperidine group. No. 2,010,562. Deric William Parkes, Edgbaston, Birmingham, and Charles Donald Mitchell, West Bromwich, England.

Production mono-alkyl-chloro-phenols. No. 2,010,595. Emil Klarmann, Jersey City, N. J., to Lehn & Fink, Bloomfield, N. J.

Production anhydrous alkali metal hyposulfites by reacting alkali metal formate, sulfur dioxide, and alkali metal compound in aqueous-methyl alcohol solution. No. 2,010,615. Byron M. Vanderbilt and Howard Adler, Chicago Heights, Ill., to Victor Chemical Works, a corp. of Ill.

Production halogenated derivatives of aliphatic acids. No. 2,010,685. Shailer L. Bass to The Dow Chemical Co., both of Midland, Mich.

Alcoholysis of olefine diesters. No. 2,010,689. Gerald H. Coleman and Garnett V. Moore to The Dow Chemical Co., all of Midland, Mich.

Production of ester by oxidizing cyclohexanol with fused caustic and acidifying reacted mixture. No. 2,010,692. Ernest F. Grether and Earl L. Pelton to The Dow Chemical Co., all of Midland, Mich.

Preparation high molecular weight ethers. No. 2,010,726. Alfred Kirstahler to firm Henkel & Cie., G.m.b.H., both of Dusseldorf, Germany.

Production hydroaromatic esters of carboxylic acids. No. 2,010,727. Alfred Kirstahler, Dusseldorf, and Wilhelm Jacob Kaiser, Dusseldorf-Benrath, Germany, to firm Henkel & Cie., G.m.b.H., Dusseldorf, Germany.

Production esters of substituted saturated fatty acids having 12 to 18 carbon atoms. No. 2,010,731. Wolfgang Lubbert, Dusseldorf, and Erich Rosenhauer, Dusseldorf-Benrath, Germany, to firm Henkel & Cie., G.m.b.H., Dusseldorf, Germany.

Production water-soluble sulfonated sulfones. No. 2,010,754. Friedrich Felix and Otto Albrecht to Society of Chemical Industry in Basle, all of Basel, Switzerland.

Production colloidal sterol dispersion in water by treating bone-meal and alfalfa with water solution of acetone or alcohol. No. 2,010,792. Jacob Siegel, N. Y. City, to Abel M. Silvan, Brooklyn, N. Y.

Production of hydrocarbons involving alkylation of aromatics. No. 2,010,949. Gustav Egloff to Universal Oil Products Co., both of Chicago.

Production ethylidene diacetate and vinyl acetate by reacting acetylene and acetic acid in presence mercury sulfonate and free organic disulfoacid. No. 2,011,011. Erich Rabald, Mannheim, Germany, to C. F. Boehringer & Soehne G.m.b.H., Mannheim-Waldhof, Germany.

Production oxidized hydrocarbons. No. 2,011,053. Julius Hyman to Velsicol Corp., Chicago, Ill.

Treatment aliphatic and cyclic saturated hydrocarbons. No. 2,011,199. Joseph J. Pelc, Chicago.

Production sodium salt of 1-phenyl-2, 3-dimethylpyrazolonyl-4-amino-methylenesulphoxylic acid. No. 2,011,255. Iwan I. Ostromislensky to Medico Chemical Corp. of America, both of N. Y. City.

Production di-methylpyrazolonyl-diphenyl by reacting di-phenyldihydrazine with ethylacetoacetate. No. 2,011,256. Iwan I. Ostromislensky to Medico Chemical Corp. of America, both of N. Y. City.

Method crystallizing and purifying crude 4.4′-di(1-phenyl-3-methylpyrazolonyl). No. 2,011,257. Iwan I. Ostromislensky to Medico Chemical Corp. of America, both of N. Y. City.

Production xanthates by reacting alcohol with carbon disulfide and alkali metal hydroxide. No. 2,011,302. Ludwig Rosenstein to Shell Development Co., both of San Francisco.

Process purifying hormone of corpus luteum. No. 2,011,337. Max Hartmann, Riehen, near Basel, and Albert Wettstein, Basel, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Production paramethyl parahydroxy diphenyl sulfide. No. 2,011,582. Treat B. Johnson, Bethany, Conn., to Sharp & Dohme, Inc., Philadelphia.

Production pentaerythrite by condensing formaldehyde and acetaldehyde in aqueous solution in presence calcium hydroxide. No. 2,011,589. Thomas Ramsay Paterson, West Kilbride, Scotland, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Production terpene esters of dicarboxylic acid. No. 2,011,707. Joseph N. Borglin to Hercules Powder Co., both of Wilmington, Del.

Production purified anthracene products. No. 2,011,724. Stuart P. Miller, Englewood, N. J., to The Barrett Co., N. Y. City.

Production condensation products of benzanthrene series. No. 2,011,789. Carl Wulff and Ernst Roell, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., N. Y. City.

Production 1-(paramethoxyphenyl)-2-formylamino-propanes. No. 2,011,790. Gordon A. Alles, Monterey Park, Cal.

Production 1,4,5,8-naphthalene-tetra-carboxylic acid and substitutions products. No. 2,011,805. Wilhelm Eckert, Heinrich Sieber, and Heinrich Greune, Frankfort-am-Main-Hochst, and Gerhard Langbein, Hofheim in Taunus, Germany, to General Aniline Works, Inc., N. Y. City.

Production resistant material for air-impervious mine ventilating tube. No. 2,012,108. Charles F. Raney, Newburgh, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production nitrogenous condensation products from acetylene and ammonia. No. 2,012,174. Leo Schlecht and Hans Roetger, Ludwigshafen-am-Rhine, to I. G., Frankfort-am-Main, Germany.

Production 1-N-methyl-4-halogen-anthrapyridone by reacting 1-N-methyl-4-halogen-anthrapyridone with nitrous acid. No. 2,012,228. Edwin C. Buxbaum, Shorewood, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Purification 1-N-methyl-4-bromo-anthrapyridone. No. 2,012,233. Henry R. Lee, South Milwaukee, and Edwin C. Buxbaum, Shorewood, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production aromatic hydrazo compounds by reduction with alcohol, caustic, and zinc dust. No. 2,012,234. Henry J. Weiland, South Milwaukee, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Purification of 1-N-methyl-4-halogen-anthrapyridone. No. 2,012,235. Henry J. Weiland, South Milwaukee, and Edwin C. Buxbaum, Shorewood, Wis., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for catalytic synthesis of amines from alcohol and ammonia. No. 19,632-reissue. Herrick R. Arnold, Elmhurst, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process treating carbon black by agitating during partial oxidation. No. 19,664-reissue. Edward H. Damon to Cabot Carbon Co., both of Pampa, Tex.

Glass and Ceramics

Laminated glass comprising sheets of glass, cellulose acetate plastic sheet, and cement of boric acid and a cellulose derivative. No. 2,006,347. Earl L. Fix, New Kensington, and John C. Zola, Tarentum, Pa., to Duplate Corp., a corp. of Del.

Laminated glass by using coating of boron compound and an alkaline metal salt, then applying heat and pressure. No. 2,006,348. Earl L. Fix, New Kensington, Pa., and John C. Zola, Detroit, Mich., to Duplate Corp., a corp. of Del.

Production safety glass using plastic bond containing an alkyl phosphate. No. 2,006,416. John K. Spe.cher to Hercules Powder Co., both of Wilmington, Del.

Production homogeneous, optically clear lead glass by fusing lead oxide and silica to form silicate free from uncombined lead oxide or silica. No. 2,007,349. Ludwig Schertel to firm; Th. Goldschmidt A.-G., both of Essen-Ruhr, Germany.

Production compound laminated glass with intermediary layer of an elastic product of a methyl ester of acrylic acid polymer. No. 2,007,645. Emil Geisel, Berlin-Charlottenberg, Germany, to Rohm & Haas A.-G., Darmstadt, Germany.

Production refractory articles. No. 2,008,117. Frank J. Tone to The Carborundum Co., both of Niagara Falls, N. Y.

Production laminated glass using cellulose plastic layer and coating of silicic, stannic, chromic, or arsenic acid. No. 2,009,441. Earl L. Fix, Tarentum, Pa., and Brook J. Dennison, Tarentum, Pa., to Duplate Corp., a corp. of Del.

Production refractory composition of mixed silicon carbide, bentonite, sodium metasilicate, and water. No. 2,009,566. Edward R. Stowell, Fort Wayne, Ind.; one-half to Worthington Hoyt, Cleveland Heights, Ohio.

Production lightweight thermal insulating material of loose fibrous material coated with water-resistant substance. No. 2,009,619. Kenneth W. Huffine, Alexandria, Ind., to Johns-Manville Corp., N. Y. City.

Method of fining glass melts by adding small amount iodine material and a reducing agent. No. 2,009,763. Robert H. Dalton to Corning Glass Works, both of Corning, N. Y.

Method fining heat absorbing reduced glasses by adding small amount bromine material and a reducing agent. No. 2,009,764. Robert H. Dalton to Corning Glass Works, both of Corning, N. Y.

Furnace construction and process to produce molten glass. No. 2,010,064. John L. Drake to Libbey-Owens-Ford Glass Co., both of Toledo, Ohio.

Method coloring gob using suspension of pigment in sodium silicate solution. No. 2,010,619. Stephen G. Wright, Chicago.

Method preparing roofing granules. No. 2,010,620. Stephen Wright, Chicago.

Production refractory glass of silica, alkalies, lime, alumina, and zinc oxide. No. 2,010,836. Geoffrey Francis Adams, Winchmore Hill, London, Ronald Walter Douglas, Wembley, and John Henry Partridge, High View, Pinner, England.

Production abrasive articles by coating granules with resin solvent and powdered resin, then heating. No. 2,010,873. Harry C. Martin, Niagara Falls, N. Y., and Frederick A. Upper, Niagara Falls, Ontario, Canada, to The Carborundum Co., Niagara Falls, N. Y.

Mold for casting basic refractories consisting of no free silica and only 50% combined silica. No. 2,011,489. Hobart M. Kraner and Frederic W. Schroeder to Cohart Refractories Co., all of Louisville, Ky.

Method repairing and treating glass pots and ceramic ware. No. 2,011,498. Robert A. Miller, Tarentum, Pa., to Pittsburgh Plate Glass Co., a corp. of Pa.

Industrial Chemicals, Apparatus, etc.

Production Portland Cement by burning to clinker, grinding, separating, and burning coarse with lime. No. 2,006,386. Harvey Randolph Durbin, New Rochelle, and Ejnar Posselt, Pelham, N. Y., to International Cement Corp., N. Y. City.

Production cementitous mass. No. 2,006,425. Ernest Walter, Montclair, to Porete Mfg. Co., North Arlington, N. J.

Retarding cement setting by use of water-soluble boron compound and water soluble gum. No. 2,006,426. John E. Weiler, Wichita Falls, Tex.

Distillation fatty acids. No. 2,006,491. Lucius M. Tolman, Chicago, to Process Fat Refining Corp., a corp. of Del.

Reclaiming pickling solution by roasting mixture iron sulfate and coal. No. 2,006,693. Ingenuin Hechenbleikner to Chemical Construction Corp., both of Charlotte, N. C.

Extraction alumina from siliceous-aluminous material through use of sulfurous acid. No. 2,006,851. Erich Wiedbrauck and Karl Buche to Firm Th. Goldschmidt A.-G., both of Essen-Ruhr, Germany.

Production of cement from inferior argillaceous limestones. No. 2,006,939. Charles H. Breerwood, Narberth, Pa., to Valley Forge Cement Co., a corp. of Pa.

Pressure electrolyzer to produce hydrogen and oxygen. No. 2,007,096. Hans Niederreither, Munich, Germany, to Druckzersetzer G.m.b.H., Berlin, Germany.

Production gypsum slab. No. 2,007,133. Carlisle K. Roos, Wheaton, Ill., to U. S. Gypsum Co., Chicago.

Oxide electrode for alkaline accumulators. No. 2,007,170. Johann Bacsa, Prossbaum, Austria, one-fifth to Alfred Oberle, Washington, D. C., and one-fifth to Stephan Mittler, Vienna, Austria.

Froth flotation separation of antimony sulfides from pyrites using copper hydroxide on pulp to activate pyrites and soluble lead salt to activate antimony. No. 2,007,176. Frederic A. Brinker, Denver, Colo.

Simultaneous production zinc sulfate and iron oxide. No. 2,007,233. Carl Robert Clemens Curt Wespy., Oberlahnstein-am-Rhine, Germany, to Carl Padberg, Barmen-Wuppertal, Germany.

Noncorrosive aqueous liquid for heat exchange devices comprising water and inhibitor of ortho-toluidine, oil, and emulsifying agent. No. 2,007,243. Frederick B. Downing, Carneys Pt., N. J., and Richard G. Clarkson, Wilmington, Del., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process making formed gypsum products. No. 2,007,315. George M. Turner, Claremont, Calif., one-half to C. R. Birdsey, Pasadena, Calif.

Removal colloidal substances from liquids of vegetable or animal origin by use of lime. No. 2,007,424. Jaroslav Dedek and Josef Vasatko, Brunn, Czechoslavakia.

Production neutral calcium hypochlorite which can be satisfactorily filtered. No. 2,007,429. Heinrich Klopstock, Aussig-am-Elbe, and Alfred Wurbs, Bokau, Czechoslavakia.

Process treating halides by reacting a nitrogen oxide higher than NO with a fused metal halide in anhydrous system. No. 2,007,478. Ludwig Rosenstein to Shell Development Co., both of San Francisco.

Cooling a reaction mixture by converting to gaseous material a normally-gaseous solid in direct contact with reaction mixture. No. 2,007,510. Irving T. Thornton, Buffalo, N. Y., to National Aniline & Chemical Co., N. Y. City.

Production lithopone. No. 2,007,527. Edmund J. Flynn, and George F. A. Stutz, Palmerton, and Carl B. Schertzinger, Slatington, Pa., to The N. J. Zinc Co., N. Y. City.

Conversion of carbon dioxide content in gas to carbon monoxide. No. 2,007,586. Otto Stalhane and Johan Bertil Stalhane, both of Stockholm, Sweden.

Extraction fish liver oil by adding glacial acetic acid to liver mass to separate oil. No. 2,007,723. Alphonso Thomas Archibald Douglas Middlemass, Penryn, Cornwall, England.

Removal of sulfur from coal distillation gases by dry purification and regeneration of dry purification gases with oxygen. No. 2,007,741. Hans Broche, Essen/Ruhr, Germany.

Filtering material comprising paper sheet soaked in thin lacquer solution and dried. No. 2,007,753. George R. Ericson, Maplewood, Mo., to Carter Carburetor Corp., St. Louis, Mo.

Production bromides by adding alkali to ammonium bromide solution, vaporizing ammonia from reaction. No. 2,007,758. Ivan F. Harlow and Charles E. Short to The Dow Chemical Co., all of Midland, Mich.

Production sulfuric acid derivatives of ether-esters. No. 2,007,869. Wolfgang Lubbert to firm Henkel & Cie., Gesellschaft mit beschrankter Haftung, both of Dusseldorf, Germany.

Recovery crystalline salts from solution by continuous mechanical circulation. No. 2,007,956. Sidney H. Davis and Carl O. Anderson, Baxter Springs, Kan., and Rudolph J. Stengl, Monahans, Tex., to Ozark Chemical Co., Tulsa, Okla.

Crystallizing levulose from aqueous levulose sirups. No. 2,007,971. Richard F. Jackson, Chevy Chase, Md.

Production hydrocarbon lead phenolate. No. 2,008,003. Wallace H. Carothers, Fairville, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Obtaining alumina by exhausting aluminate of lime with water and precipitating alumina from solution. No. 2,008,112. Jean Charles Seailles, Paris, France.

Production structural, activated, adsorptive carbon. No. 2,008,144. Jacque C. Morrell, Oak Park, Ill.

Production non-structural, activated, adsorptive carbon. No. 2,008,145. Jacque C. Morrell, Oak Park, Ill.

Production structural activated carbon for refining, purifying, and decolorizing purposes. No. 2,008,146. Jacque C. Morrell, Oak Park, Ill.

Production compressed carbonaceous materials and activated carbon. No. 2,008,147. Jacque C. Morrell, Oak Park, Ill.

Production structural activated carbon. No. 2,008,148. Jacque C. Morrell, Oak Park, Ill.

Production metal complex compound solution. No. 2,008,252. Fritz Jostes, Frankfort-am-Main, Heinrich Jung, Wuppertal-Vohwinkel, and Hans Andersag, Wuppertal-Elberfield, Germany, to Winthrop Chemical Co., Inc., N. Y. City.

Separating hydrocyanic acid as ammonium thiocyanate from acid, ammonia and sulfuretted gases using washing lye containing nickel compounds. No 2,008,253. Walter Klempt to Gesellschaft fur Kohlentechnik mit beschrankter Haftung, both of Dortmund-Eving, Germany.

Continuous production carbon black by catalytic decomposition of carbon monoxide. No. 2,008,270. Jacobus Joannes Cornelius Willekens, Brussels, Belgium, to The General Carbonalpha Co., Wilmington, Del.

Method obtaining crystallized glucose or xylose from solutions by use of certain percentage mannose. No. 2,008,284. Friedrich Koch, Heidelberg, and Hugo Koch, Mannheim-Rheinau, Germany, to N. V. Internationale Suiker en Alcohol Co., 's-Cravenhage, Netherlands.

Production and storage of liquid carbon dioxide. No. 2,008,309. Guido Maiuri, Aldwych, London, England, to Maiuri Refrigeration Patents Ltd., London, England.

Filtering medium of fine-grained stone-like body composed of silica and powdered glass fused together. No. 2,008,327. Wm. C. Kruppinger, East Rochester, N. Y., to Filtros Inc., Rochester, N. Y.

Production chlorine dioxide. No. 2,008,388. George Lewis Cunningham, Niagara Falls, N. Y., to The Mathieson Alkali Works, Inc., N. Y. City.

Protecting cement structures from solution using alkaline solution in troughs through the cement structure. No. 2,008,472. Jean Charles Seailles, Paris, France.

Solid gas-producing compositions which evolve gas under heat comprising ammonium salt, alkali metal nitrite and an inert dehydrating agent. No. 2,008,489. Wilfred Rodney Cousins, Northwich, England, to Imperial Chemical Industries Ltd., a corp. of Great Britain.

Liquid-phase oxidation of high molecular weight aliphatic compounds. No. 2,008,490. Wilhelm Dietrich, Oppau, and Martin Luther, Mannheim, Germany, to I. G., Frankfort-am-Main, Germany.

Treatment of waste distillery slop to render available for propagation of commercial compressed yeast. No. 2,008,584. Harold L. King, Bloomfield, N. J., to National Grain Yeast Corp., Belleville, N. J.

Formation expansion joint between slabs in pavement, using composition of bituminous material, fibrous material, and a volatile solvent. No. 2,008,667. Frederick S. Fleckenstein, Syracuse, N. Y., to The Barrett Co., N. Y. City.

Production structural material of strongly compressed cementitous material reinforced with asbestos fibres. No. 2,008,718. Edward M. Jenkins, Somerville, N. J., to Johns-Manville Corp., N. Y. City.

Depositing insoluble compound in oxide-coated aluminum surface using hydrolyzed salt solution of a weak metallic base. No. 2,008,733. Martin Tosterud, Arnold, Pa., to Aluminum Co. of America, Pittsburgh.

Process and apparatus for sulfur trioxide production. No. 2,008,761. Alphons O. Jaeger, Mount Lebanon, Pa., to American Cyanamid & Chemical Corp., a corp. of Del.

New acetylene generator. No. 2,008,821. Arthur J. Fausek and Irwing F. Fausek.

Flotation separation of sulfide ores using a zinc cyanide from which sulfate radical is removed. No. 2,008,928. Joseph P. Ruth, Jr., and Frederic A. Brinker to The Ruth Co., all of Denver, Colo.

Production of gas purification mass by making paste of hydrated iron oxide, magnesia cement, and alkali metal carbonate, and heating to decompose carbonate. No. 2,008,953. Fritz Giller and Ludwig Friederici, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Process reducing water content of liquids. No. 2,008,955. William A. Hammond, Yellow Springs, Ohio.

Production bituminous paving composition. No. 2,008,978. Karl Daimler, Frankfort-am-Main-Hochst, Germany, to I. G., Frankfort-am-Main, Germany.

Production pectin by digesting pectin material with strong inorganic acid and precipitating pectin with soluble calcium salt. No. 2,008,999. Leo Wallerstein to Wallerstein Co., Inc., both of N. Y. City.

Minimizing polymerization by reacting sulfuric acid with olefine higher than ethylene and adding alcohol to react with remaining acid. No. 2,009,062. Kenneth B. Lacy, Highland Park, Ill., to Van Schaack Bros. Chemical Works, Inc., Chicago.

Process obtaining nearly pure oxygen and nitrogen from air by liquefaction and rectification. No. 2,009,084. Eugene Gomonet, Paris, France, to Air Reduction Co., Inc., N. Y. City.

Production plaster mix ready to be calcined of pulverized raw calcium sulfate and comminuted raw vermiculite. No. 2,009,146. Gustave Adolph New, Lakewood, Ohio, to Thurlow G. Gregory.

Regenerative furnace. No. 2,009,236. Fred H. Loftus, Pittsburgh, Pa.

Method of uniformly freezing a water solution with and without emulsions. No. 2,009,283. Douglas Kent Warner, Bristol, Conn.

Recovery of waxy bodies from sugar cane. No. 2,009,522. Miguel A. Rosales, Bias Oriental Negros, Philippine Islands.

Acetylene generator. No. 2,009,543. Maurice P. De Motte, Indianapolis, Ind., to Oxweld Acetylene Co., a corp. of W. Va.

Partial oxidation of hydrocarbons using gas containing oxygen and oxides of nitrogen. No. 2,009,662. Joseph Hidy James, Pittsburgh, Pa., to Clarence P. Byrnes, Sewickley, Pa., trustee.

Partial oxygen derivative of hydrocarbons. No. 2,009,663. Joseph Hidy James, Pittsburgh, Pa., to Clarence P. Byrnes, Sewickley, Pa., as trustee.

Two-step oxidation hydrocarbons using oxygen containing gases and subsequent free oxygen. No. 2,009,664. Joseph Hidy James, Pittsburgh, Pa., to Clarence P. Byrnes, Sewickley, Pa.

Process desulfurizing sulfur bearing ores to produce sulfur dioxide and a metal oxide. No. 2,009,733. Ingenuin Hechenbleikner to Chemical Construction Corp., both of Charlotte, N. C.

Production lactic acid from fermentation liquors of lactose solution by distilling concentrated calcium lactate solution with dilute sulfuric acid. No. 2,009,753. Oliver M. Urbain, Columbus, Ohio, to Charles H. Lewis, Harpster, Ohio.

Production chemical composition by treating partially saponified triglyceride and soap mixture with strong acid. No. 2,009,796. Benjamin R. Harris, Chicago.

Production aqueous dispersions of bituminous or other water repellant wastes. No. 2,009,821. Augustus George Terrey, Leonard Gowen Gabriel, and John Frederick Thomas Blott, London, England, to The Flintkote Co., N. Y. City.

Production acetic acid by oxidation of acetaldehyde. No. 2,009,838. George H. Foster, Cranford, N. J., to American Cyanamid Co., N. Y. City.

Extracting iodine from natural brines by acidifying, chlorinating, adding nitrite, and contacting on active charcoal to adsorb iodine. No. 2,009,956. Leonard C. Chamberlain and Ray H. Boundy to Dow Chemical Co., all of Midland, Mich.

Coke-oven gas by-product recovery. No. 2,010,003. Joseph Becker, Pittsburgh, Pa., to The Koppers Co. of Del., a corp. of Del.

Production barium nitrate by reacting barium carbonate with calcium nitrate in presence of water. No. 2,010,046. Norman R. Wilson, Belleville, N. J., to H. C. Bugbird Co., Inc., N. Y. City.

Reduction of nitro and other compounds using iron mass as reducing agent. No. 2,010,067. Henry Dreyfus, London, England.

Production solutions of alkali metal salts of sulfurous acid. No. 2,010,077. Gustaf Haglund to Patentaktiebolaget Grondal-Ramen, both of Stockholm, Sweden.

Ozone generator. No. 2,010,081. Frank E. Hartman; one-third to Fred H. Montgomery and one-third to W. Ray Montgomery, all of Chicago.

Production partial oxidation products using hydrocarbon material containing unsaturated bonds. No. 2,010,086. Joseph Hidy James, Pittsburgh, Pa., to Clarence P. Brynes, as trustee, Sewickley, Pa.

Catalytic oxidation of ammonia. No. 2,010,235. Alphons O. Jaeger, Crafton, Pa., to American Cyanamid & Chemical Corp., a corp. of Del.

Process for stabilizing acid liquor by adding certain metallic compounds. No. 2,010,337. Adrianus Johannes van Peski, Amsterdam, Netherlands, to Shell Development Co., San Francisco.

Process for conserving fresh fruit treating solutions. No. 2,010,341. Clarence P. Wilson, Ontario, and Robert D. Nedvidek, Pomona, Cal., to California Fruit Growers Exchange, Los Angeles.

Production gaseous carbon monoxide and hydrogen mixtures by decomposing methanol using heat and reduced copper-nickel catalyst. No. 2,010,427. James F. Eversole, Charleston, W. Va., to Carbide & Carbon Chemicals Corp., a corp. of N. Y.

Concentration dilute acetic acid liquors. No. 2,010,548. Herbert Langwell, Windmill End, Epsom, and Robert Gilmour, London, England, to Standard Brands Inc., N. Y. City.

Gas-electrode having gas-permeable cathode of charcoal and a black. No. 2,010,608. Edwin A. Schumacher and Victor C. Hamister, Lakewood, and George W. Heise, North Olmstead, Ohio, to National Carbon Co., Inc., a corp. of N. Y.

Production silicious absorbent by calcining organic containing silicious material, digesting with hot alkali, precipitating silica. No. 2,010,655. Herbert J. Wollner, Brooklyn, N. Y., and George P. Taylor, Westfield, N. J., to General Chemical Co., N. Y. City.

Process for recovery of alcohols. No. 2,010,686. Franklin A. Bent and Russell W. Millar, Berkeley, Cal., to Shell Development Co., San Francisco.

Welding electrode with flux of ilmenite and a feldspar or asbestos. No. 2,010,722. Joseph H. Humberstone, Schenectady, N. Y., to General Electric Co., a corp. of N. Y.

Production fire extinguishing composition of sodium bicarbonate, boric acid, potassium bitartrate and borax. No. 2,010,729. Albert Langlois, Fall River, Mass.

Process manufacturing multivalent electrolytes and products. No. 2,010,756. Albert L. Genter, Baltimore, Md.

Production composition for cleaning oil wells of alkali, alkali metal nitrate, a metal, and a water-free mineral oil. No. 2,010,800. Edward Maurice Adams, Lexington, Ky., and Wilmer Charles Gangloff and Grace G. Spencer, Cincinnati, Ohio, to The Drackett Chemical Co., Cincinnati, Ohio.

Separation oil-wax mixtures using alkali phosphate solution. No. 2,010,819. Joseph Bennett Hill, Wynnewood, Pa., to The Atlantic Refining Co., Philadelphia, Pa.

Production hydrocarbon chemical compound. No. 2,010,828. Henry S. Rothrock to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Process chlorinating a carboxylic organic compound using liquid chlorine. No. 2,010,841. Harry Bender, Concord, Cal., to Great Western Electro-Chemical Co., San Francisco, Cal.

Separation beryllium and silica using acid to form massive silica gel. No. 2,010,844. John E. Bucher to Antioch Industrial Institute, Inc., both of Yellow Springs, Ohio.

Recovery of alcohol by continuous multiple effect evaporation of alcohol fermented liquors. No. 2,010,929. Gustave T. Reich, Philadelphia.

Process treating sulfur bearing ores. No. 2,011,039. Russell P. Crothers, Cincinnati, Ohio.

Destructive distillation of carbonizable material. No. 2,011,054. Lewis C. Karrick, N. Y. City.

Process of ore concentration by agitating and aerating ore pulp with mineral-frothing agent. No. 2,011,176. Cornelius H. Keller, San Francisco, Cal., to Minerals Separation North American Corp., N. Y. City.

Process of ore concentration by dispersing ore pulp with alkaline xanthate and activated carbon material. No. 2,011,177. Cornelius H. Keller, San Francisco, Cal., to Minerals Separation North American Corp., N. Y. City.

Production of pure barium compounds following production of pure barium zincates. No. 2,011,281. Max Herder, Hamburg, Germany, to Sachtleben Aktiengesellschaft fur Berghau und Chemische Industrie, Cologne-am-Rhine, Germany.

Production preparations containing aluminum acetate and aluminum formate. No. 2,011,292. Ernst Koch, Frankfort-am-Main, Germany, to General Aniline Works, Inc., N. Y. City.

Production sulfates of ammonia by forming 10% ammonium bisulfite solution from passing ammonia and sulfur dioxide into water. No. 2,011,307. Adrianus Johannes van Peski, Amsterdam, Netherlands, to Shell Development Co., San Francisco.

Process for dehydrogenation of unsaturated alcohols. No. 2,011,317. Herbert Peter Augustus Groll, Oakland, Cal., to Shell Development Co., San Francisco.

Separation of weak gaseous acids from gases by scrubbing. No. 2,011,386. Heinrich Ulrich, Heinrich Dehnert, and Friedrich August Fries, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Froth flotation apparatus. No. 2,011,483. Mahlin S. Hansen, Speedway City, Indianapolis, Ind., to Peter C. Reilly, Indianapolis, Ind.

Process recovering solid carbon dioxide from gas mixture. No. 2,011,550. Rudolph Leonard Hasche, Red Bank, N. J., to Carbonic Development Corp., a corp. of Del.

Production solid carbon dioxide from gas mixture. No. 2,011,551. Rudolph Leonard Hasche, Milwaukee, Wis., to Carbonic Development Corp., a corp. of Del.

Production methylamine by treating solution or suspension of metal cyanide with hydrogen in presence hydrogenation catalyst. No. 2,011,569. Henry Dreyfus, London, England.

Production methylamine by reacting vapors of hydrogen cyanide with hydrogen in presence electro-positive hydrogenation catalyst. No. 2,011,570. Henry Dreyfus, London, England.

Production intensified hydrochloric acid containing hydrochloric acid, a soluble fluoride, and a metal corrosion inhibitor. No. 2,011,579. Sheldon B. Heath and William Fry to the Dow Chemical Co., all of Midland, Mich.

Improving color and odor of tar acids by dissolving in alkaline solution to form carbolate and treating carbolate with heavy metal gelatinous hydroxide. No. 2,011,633. Carl E. Hartwig, Bayonne, N. J., to The Barrett Co., N. Y. City.

Production cadmium from complex cadmium sulfate solution. No. 2,011,739. Roscoe Teats, Denver, Colo., to American Smelting & Refining Co., N. Y. City.

Treating condensation product of anthracene compound and chloroacetylchloride with aluminum choloride to produce anthracene derivative. No. 2,011,806. Wilhelm Eckert, and Walter Gmelin, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., N. Y. City.

High temperature torch producing high temperature reducing flames using joint atomic hydrogen and electric arc flame with encircling flame of oxygen. No. 2,011,872. Alexander Rava, Chicago.

Treatment sulfate solutions of thallium and cadmium. No. 2,011,882. Roscoe Teats, Denver, Colo., to American Smelting & Refining Co., N. Y. City.

Production cured tung oil acid. No. 2,011,908. Henry Lyne Plummer, Philadelphia, and Leslie Field Stone, Morton, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process for electrolytic reduction of nitrobenzene. No. 2,012,046. Joseph E. Jewett, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., N. Y. City.

Production monochromates and dichromates by oxidizing chromium oxides in aqueous solution in presence of substance giving up free acting cations. No. 2,012,061. Jules Emile Demant, Cuise-Lamotte, France, to Bozel-Maletra, Societe Industrielle de Produits Chimiques, Paris, France.

Production monochromates and dichromates by oxidizing metallic chromium in aqueous solution in presence substance giving up free acting cations. No. 2,012,062. Jules Emile Demant, Cuise-Lamotte, France, to Bozel-Maletra, Societe Industrielle de Produits Chimiques, Paris, France.

Production plaster composition of commercial plaster and spent oil-decolorizing clay. No. 2,012,069. John E. Meade and Eric W. Mystrom; one-half to Floridin Co., all of Warren, Pa.

Production thio-sulfates and sulfonates of compound ethers. No. 2,012,073. Erik Schirm, Dessau (Anhalt), Germany, to "Unichem" Chemikalien Handels, A.-G., Zurich, Switzerland.

Method and apparatus for separating and purifying helium from gaseous mixture. No. 2,012,080. William Lane De Baufre, Lincoln, Nebr.

Separation stearin and olein from fatty acid mixtures by crystallization from water-solvent emulsion. No. 2,012,106. Ernst Alfred Mauersberger, Maarssen, near Utrecht, Netherlands.

Leather and Tanning

Slackening animal hides and skins with hydrogen sulfide aqueous solution of alkaline earth metal and ammonia. No. 2,007,984. Bernhardt Quendt, Essen, Germany.

Preserving hides and skins by spreading pulverized tanned leather and rock salt over inner side of hide. No. 2,010,383. Max Stern, Mannheim-Feudenheim, Germany.

Production artificial leather composition containing koniaku, tannin, and fibrous base. No. 2,011,590. Gaston Hubert Vulliet-Durand, Paris, to Paul Henri Perrin, Chatou, France.

Metals, Alloys, Ores

Magnesium base alloy of 1 to 15% tin, .1 to 3.0% manganese, .1 to 1.0% silicon, balance magnesium. No. 2,006,565. Robert T. Wood, Cleveland, O., to Magnesium Development Corp., a corp. of Del.

Production corrosion-resistant, malleable alloy of copper-zinc as gamma brass with 3 to 10% cobalt or nickel. No. 2,006,598. Wolf Johannes Muller and Moritz Niessner, Vienna, Austria, to Oesterreichische Dynamit Nobel Akteingesellschaft, Vienna, Austria.

Production corrosion-resistant, workable, copper-zinc alloy of beta plus gamma brass with 2 to 10% of either nickel or cobalt. No. 2,006,599. Wolf Johannes Muller and Moritz Niessner to Oesterreichische Dynamit Nobel Akteingesellschaft, all of Vienna, Austria.

Production corrosion-resistant, malleable copper-zinc alloy of gamma brass with 3 to 10% each of cobalt and nickel. No. 2,006,600. Wolf Johannes Muller and Moritz Niesser to Oesterreichische Dynamit Nobel Akteingesellschaft, all of Vienna, Austria.

Production corrosion-resistant, workable copper-zinc alloy of beta plus gamma brass with 2 to 10% each of nickel and cobalt. No. 2,006,601. Wolf Johannes Muller and Moritz Niessner to Oesterreichische Dynamit Nobel Akteingesellschaft, all of Vienna, Austria.

Production magnetic material by consolidating and interdiffusing an iron and nickel mixture with heat. No. 2,006,987. Franz Duftschmid, Heidelberg, Germany, to I. G., Frankfort-am-Main, Germany.

Copper-zinc base alloy of 61% copper, .4 to .8% silicon, .2 to .4% iron, remainder zinc. No. 2,007,008. Horace A. Staples, Plainfield, N. J., to Phelps Dodge Copper Products Corp., N. Y. City.

Depositing from copper-containing electrolytic bath by raising current density till it increases of its own accord and voltage tends to decrease. No. 2,007,091. Hermann Kuppel and Louis Simeant, Clichy, France, to Societe a Responsabilite Limitee Kuppel & Simeant, Clichy, France.

Barburizing or hardening iron or iron alloys. No. 2,007,136. Carl Albrecht, Cronberg in Taunus and Walter Beck, Frankfort-am-Main, Germany, to Deutsche Gold & Silber Scheideanstalt vormals Roessler, Frankfort-am-Main, Germany.

Coating iron and steel by first coat of continuous, adherent, electro-positive zinc and second of lead. No. 2,007,221. Wallace H. Smith, Glendale, W. Va.

Apparatus for distillation of zinc, cadmium, mercury, and other volatile metals. No. 2,007,332. Friedrich Johannsen, Magdeburg, Germany, to Fried. Krupp Grusonwerk Aktiengesellschaft, Magdeburg-Buckau, Germany.

Non-stainable copper alloy containing nickel, cobalt, silicon, aluminum, molybdenum, iron, and calcium, with copper predominating. No. 2,007,430. Frederick J. Maas, Chicago.

Treatment of antimonial lead to obtain metal of lead and antimony in eutectic ratio. No. 2,007,545. Harold H. Monson, Omaha, Neb., to American Smelting & Refining Co., N. Y. City.

Production of metal with phosphide case through use of phosphorus vapors. No. 2,007,977. Roy B. McCauley, Chicago Heights, Ill.

Treating metal to render resistant by alloying metal case with phosphorus to form phosphide. No. 2,007,978. Roy B. McCauley, Chicago Heights, Ill.

Production ferro-chromium using exothermic reducing agents of 65% chromium ore containing 48% Cr_2O_3, 23% calcium silicide, 4% aluminum, 4% fluorspar, 2% ferro-silicon and 2% lime. No. 2,008,055. Viginio Angelini, Milan, Italy.

Production bactericidal products by treating silver carrier to convert silver to a compound containing silver or manganese oxide. No. 2,008,131. Wilhelm Dieck, Berlin, and Sally Schiff, Berlin-Charlottenberg, Germany.

Refining aluminum by melting, fluxing, skimming molten metal, cooling, and casting. No. 2,008,188. Jacob J. Ripner, Cleveland Heights, Ohio.

Production chromium plate on steel of .30 to .10% carbon, 5 to 9% chromium, and .20 to .40% magnesium, remainder iron. No. 2,008,282. William H. Keen, Albany, N. Y.

Production alloys containing yttrium metals of rare earths, by using yttrium metal oxalates in molten iron bath. No. 2,008,302. James B. Grenagle; one-half to William W. Varney and one-half to Universal Alloys, Inc., all of Baltimore, Md.

Method of purifying cement copper. No. 2,008,373. Henry A. Tobelmann, Salt Lake City, Utah.

Iron alloy for use as welding rod containing titanium, silicon, and carbon. No. 2,008,447. Ture Robert Haglund, Stockholm, to Stig Johan Alvar Ingemar Harlitz, Wargon, Sweden.

Production heat treated cast iron. No. 2,008,452. Maurice G. Jewett and Samuel C. Harris to Chain Belt Co., all of Milwaukee, Wis.

Zinc base alloy of 1 to 15% aluminum, .005 to .5% magnesium, .005 to .5% nickel, balance 99.99% pure zinc. No. 2,008,529. George L. Werley, Palmerton, Pa., to The N. J. Zinc Co., N. Y. City.

Method inhibiting pitting corrosion of aluminum by adding a soluble nitrate to an acidic hydrogen peroxide solution. No. 2,008,726. Joseph S. Reichert, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Treatment of easily oxidizable metal to produce molten alloy using solid carbon dioxide on melt surface. No. 2,008,731. Philip T. Stroup, New Kensington, Pa., to Aluminum Co. of America, Pittsburgh.

Pickling sheet metal using sheets of inert material to separate metal sheets in pickling bath. No. 2,008,781. James R. Bottoms, Butler, Pa., to American Rolling Mill Co., Middletown, Ohio.

Stainless alloy for casting consisting of 65 to 75% nickel, 10 to 30% chromium, 12% or less steel, .3 to 4% tungsten, and .2 to 2% cobalt. No. 2,008,862. Lorenzo S. Guetti, Athol, Mass.

Prevention of adhesion between metal sheets using mixture of finely divided graphite, powdered charcoal, and alcohol free sugar solution. No. 2,008,880. Merle J. Stoops, Blasdell, N. Y.

Process of hardening steel by treating with fused mixture of silica, feldspar, and borax. No. 2,009,165. Richard Watson Cross, Chicago.

Production free-machining ferrous alloy containing metalloid of selenium-tellurium group and phosphorus-arsenic embrittling agent. No. 2,009,713. Frank R. Palmer to The Carpenter Steel Co., both of Reading, Pa.

Production free-machining carbon steel containing metalloid of selenium-tellurium group and phosphorus. No. 2,009,714. Frank R. Palmer to The Carpenter Steel Co., both of Reading, Pa.

Production free machining alloy tool steel containing selenium-tellurium group metalloid with inherently machinable non-austenitic base. No. 2,009,715. Frank R. Palmer to The Carpenter Steel Co., both of Reading, Pa.

Production free machining structural alloy of predominately iron with selenium-tellurium group as metalloid and inherently machinable "Structural alloy" base. No. 2,009,716. Frank R. Palmer to The Carpenter Steel Co., both of Reading, Pa.

Alloy steel containing chromium, a nickel-like metal, a molybdenum-like metal, and carbon No. 2,009,974. Peter Payson to Crucible Steel Co. of America, both of N. Y. City.

Production welding rod of 3.5% silicon, .5% tin, .05% phosphorus, balance nearly all copper. No. 2,009,977. Richard A. Wilkins to Revere Copper & Brass Inc., both of Rome, N. Y.

Production alloys containing metal of iron group. No. 2,010,230. Emil Gustaf Torvald Gustafsson, Stockholm, Sweden

Welding electrode of stainless steel core with conductive first coating and second coating of flux material. No. 2,010,605. Wilber B. Miller, Flushing, N. Y., to Oxweld Acetylene Co., a corp. of W. Va.

Welding electrodes consisting of feldspar, titanium dioxide, and liquid sodium silicate. No. 2,010,695. Walter B. Lair, Scotia, N. Y., to General Electric Co., a corp. of N. Y.

Process recovering elementary selenium from anode slime of copper electrolysis. No. 2,010,870. Axel Rudolf Lindblad, Djursholm, Sweden.

Production cathode insulator of metal oxide body. No. 2,011,173. Henry L. Crowley to Henry L. Crowley & Co., Inc., both of West Orange, N. J.

Production non-ferrous alloy of copper, aluminum, nickel, and slightly impure zinc. No. 2,011,259. William B. Price to Scovill Mfg. Co., both of Waterbury, Conn.

Production magnesium by reacting magnesium oxide and carbon. No. 2,011,288. Frank R. Kemmer, Larchmont, N. Y., to Magnesium Products, Inc., Wilmington, Del.

Recovering tin and lead from scrap mixtures using hot caustic. No. 2,011,305. Walton S. Smith, Colonia, N. J.

Production steel cutting composition of tantalum carbide, tungsten, nickel and manganese. No. 2,011,369. Philip M. McKenna, Unity Township, Westmoreland County, Pa., to Vanadium Alloys Steel Co., Latrobe, Pa.

Process treating zinciferous iron ores by reduction in rotary furnace to metallic solid iron and volatile zinc. No. 2,011,400. Fritz Eulenstein, Cologne-am Rhine, and Adolf Krus, Sturzelberg uber Neuss, Germany, to "Sachtleben" Akteingesellschaft fur Berghau und Chemische Industrie, Cologne-am-Rhine, Germany.

Extraction tin from tin oxide ores by chloridization and volatilization as stannous chloride. No. 2,011,533. Louis Albert Wood to British American Mines Ltd., both of London, England.

Production magnesium duplex metal using magnesium alloy base and coating of magnesium metal. No. 2,011,613. Robert H. Brown and Lowell A. Willey, New Kensington, Pa., to Magnesium Development Corp., a corp. of Del.

Arc welding electrode of chrome alloy steel core with coating of columbium to combine with all carbon in core. No. 2,011,706. Harry S. Blumberg to M. W. Kellogg Co., both of N. Y. City.

Production cobalt-iron-tungsten alloy. No. 2,011,976. Werner Koster, Dortmund, Germany, to Vereinigte Stahlwerke Akteingesellschaft, Dussel dorf, Germany.

Production ductile malleable zinc alloy using .075% alloying material of either manganese or nickel or both. No. 2,011,987. Frank W. Harris to Urlyn C. Tainton, both of Baltimore, Md.

Production phonograph recording disk of aluminum having oxidized surface impregnated with coloring matter. No. 2,012,134. Hisaji Kubo, Shiba-Ku, Tokyo, Japan.

Paper and Pulp

Process pulping wood chips. No. 2,007,024. George A. Richter to Brown Co., Berlin, N. H.

Treating paper with parchmentizing agent to produce insulating or "fish" paper. No. 2,008,141. James L. McClellan, Littleton, Mass., to Hollingsworth & Vose Co., Boston, Mass.

Preparation paper pulp containing cotton, hemp, kraft or sulfate fibers. No. 2,008,142. James L. McClellan, Littleton, Mass., to Hollingsworth & Vose Co., Boston, Mass.

Production fire-resistant wall board using dry porous fibrous sheet with absorbed silicate of soda and chlorinated diphenyl coating. No. 2,010,015. John Fletcher, Kenmore, N. Y., to Plastergon Wall Board Co., Buffalo, N. Y.

Production waterproof paper by using first dilute thiosulfocarbonate, then fresh cellulose thiosulfocarbonate. No. 2,011,156. Harry Huet Nelson, Paris, and Guillaume Becker, Versailles, France.

Production slippery surface paper by retaining moisture through use of plasticizer. No. 2,011,609. George L. Bidwell, Riegelsville, Pa., to Reigel Paper Corp., Reigelsville, N. J.

Production copperized paper by addition of copper sulfate solution in beater. No. 19,643—reissue. William R. Barber, Albert G. Natwick, and Maurice W. Phelps, Camas, Wash., to Crown Willamette Paper Co., San Francisco.

Petroleum Chemicals

Purifying alcohols of polymerization products by treatment with cyclic hydrocarbons. No. 2,006,400. Hermanus Frans, Joseph Lorang, and Pieter W. van der Sluijs, Amsterdam, Netherlands, to Shell Development Co., San Francisco.

Preparation of stock for distillation of lubricating oil involving use of alkali. No. 2,006,407. Arthur E. Pew, Jr., Bryn Mawr, Pa., to Sun Oil Co., Philadelphia.

Treatment hydrocarbon oil by reacting cyclic hydrocarbon with olefin in presence of sulfuric acid-phosphoric acid catalyst. No. 2,006,695. Vladimir Ipatieff, to Universal Oil Products Co., both of Chicago, Ill.

Production cracked hydrocarbon motor fuel containing a thio diaryl amine as a stabilizer. No. 2,006,756. Thomas W. Bartram, Nitro, W. Va., to The Rubber Service Laboratories, Akron, O.

Conversion solid fuels and solid fuel products into valuable liquids by treatment with hydrogen, solid heavy metal sulfide, and zinc, magnesium, aluminum etc. compound. No. 2,006,996. Carl Krauch, Ludwigshafen-am-Rhine, and Mathias Pier, Heidelberg, Germany, to Standard I. G. Co., Linden, N. J.

Production hydrocarbon oxygen compounds by heating mixture two aliphatic hydrocarbons (fluid) with small volume oxygen. No. 2,007,115. John Charles Walker, Eldorado, Kans., to Empire Oil & Refining Co., Bartlesville, Okla.

Oxidizing hydrocarbons by partial oxidation using compound catalyst favoring dehydration and oxidation. No. 2,007,116. John Charles Walker, Tallant, Okla., to Empire Oil and Refining Co., Bartlesville, Okla.

Production stable freely flowing lubricant containing stably suspended powdered sulfur distributed through gel. No. 2,007,137. Victor R. Abrams, Brunswick, Ga., to Sulflo Corp. of America, a corp. of Georgia.

Removal naphthenic acids from hydrocarbon oils. No. 2,007,146. Francis M. Rogers to Standard Oil Co., both of Whiting, Ind.

Segregation tertiary base olefins from hydrocarbon mixtures using selective acid absorbent for olefins, polymerizing dissolved olefin, and removing as polymer. No. 2,007,159. William Engs and Richard Moravec, Berkeley, Calif., to Shell Development Co., San Francisco.

Removal tertiary base olefins from olefin mixture by polymerization of tertiary olefins with hot acid. No. 2,007,160. William Engs and Richard Moravec, Berkeley, Calif., to Shell Development Co., San Francisco.

Production carboxylic acid anhydrides by reacting a ketene with a carboxylic acid of at least 2 carbon atoms and a different number of carbon atoms than the ketene. No. 2,007,642. Martin de Simo, Berkeley, Cal., to Shell Development Co., San Francisco.

Conversion normally gaseous hydrocarbon by heat treatment into hydrocarbon of lower hydrogen to carbon ratio. No. 2,007,754. Paul Feller and Hans Haeuber, Ludwigshafen-am-Rhine, Germany, to I. G., Frankfort-am-Main, Germany.

Sizing material containing petroleum distillate, aluminum stearate, acetic acid, and nitric acid. No. 2,008,304. Max W. Hendrich, Millington, N. J.; one-fourth to R. W. Semerad, Millington, N. J., and three-fourths to Harry Radzinsky, N. Y. City.

Production oil composition. No. 2,008,419. Samuel M. Herman, Brooklyn, N. Y.

Stabilization of halogenated hydrocarbons. No. 2,008,680. Paul Johnson Carlisle and Charles Roberts Harris, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Use of inhibitors in treatment of motor fuel. No. 2,009,118. Jacque C. Morrell to Universal Oil Products Co., both of Chicago, Ill.

Production gaseous olefins by cracking paraffinic hydrocarbon gases. No. 2,009,277. Robert F. Ruthruff, Hammond, Ind., to Standard Oil Co., Chicago.

Purification of hydrocarbons with a light, non-viscuous petroleum distillate. No. 2,009,366. Justin F. Wait to John C. Wait, N. Y. City.

Dewaxing hydrocarbon with solvent of low-boiling chlorine or fluorine derivatives of methane. No. 2,009,454. Hans Ramser, Berlin-Steglitz, Germany, to firm Edeleanu Gesellschaft m.b.H., Berlin, Germany.

Production pure mercaptans from cracked petroleum distillate. No. 2,009,554. Antoine Eugene Lacomble, San Mateo, Cal., to Shell Development Co., San Francisco, Cal.

Method removing ash-forming components from crude petroleum oil. No. 2,009,710. Ralph T. Goodwin, Elizabeth, N. J., to Standard Oil Development Co., a corp. of Del.

Production compressed ignition fuel comprising an oil boiling above gasoline range. No. 2,009,818. Paul L. Salzberg and Wesley R. Peterson to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Refining cracked hydrocarbon vapors by adding hydrogen, aqueous zinc salt solution, and adjusting temperature and pressure conditions. No. 2,009,879. Gustav Egloff to Universal Oil Products Co., both of Chicago.

Refining hydrocarbon distillates by mixing with a nitrogen oxide and inert gas and passing mixture through adsorbent earthy material. No. 2,009,898. Jacque C. Morrell to Universal Oil Products Co., both of Chicago.

Purifying light petroleum distillates with caustic and a hydrocarbon solution of sulfur. No. 2,009,954. Robert E. Burk to Standard Oil Co., both of Cleveland, Ohio.

Motor fuel of methyl alcohol and oxide of carbon hydrogenation by-products. No. 2,010,005. Julius F. T. Berliner to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Inhibiting gum formation in motor fuel by use of coal tar fraction. No. 2,010,029. Jacque C. Morrell and Charles G. Dryer to Universal Oil Products Co., all of Chicago.

Process treating hydrocarbon oils and bituminous material by using zinc chloride in an emulsion state. No. 2,010,357. Alfred Fisher to Universal Oil Products Co., both of Chicago.

Treating lubricating oils by mixing stock with aluminum chloride and a low boiling halogenated hydrocarbon. No. 2,010,387. Eugene Ayres and Herschel G. Smith, Swarthmore, Pa., to Gulf Refining Co., Pittsburgh.

Treating wells having oil and water formations by use of two reagents capable of reacting in presence of water to give sulfur. No. 2,010,409. Irving E. Muskat, Pittsburgh, Pa., to Gulf Research & Development Corp., Wilmington, Del.

Coloring and improving lubricating oils by adding liquid polymerization product from sulfur dioxide treatment. No. 2,010,606. Franz Rudolf Moser, Amsterdam, Netherlands, to Shell Development Co. San Francisco. Francisco.

Production motor fuel containing small amount tetraline peroxide. No. 2,011,297. Franz Rudolf Moser, Amsterdam, Netherlands, to Shell Development Co., San Francisco.

Process converting normally gaseous hydrocarbons into liquid products of benzol. No. 2,011,385. Charles C. Towne, Poughkeepsie, N. Y., to The Texas Co., N. Y. City.

Sweetening hydrocarbon oil by reacting with aqueous suspension of lead sulfide, aqueous alkaline solution and a peroxide. No. 2,011,954. Charles F. Teichmann to The Texas Co., both of N. Y. City.

Production lubricating grease. No. 2,012,252. Arthur W. Burwell, Niagara Falls, N. Y., to Alox Corp., N. Y. City.

Pigments

Treatment to render pigment mass non-caking by using protective agent. No. 2,009,435. Cole Coolidge and Harold Stephens Holt to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Production non-caking dry titanium oxide pigment covered with protective wax or stearin pitch film. No. 2,009,436. Cole Coolidge and Harold S. Holt to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Production non-caking titanium oxide pigment having surface film of acid oil sulfonation product. No. 2,009,437. Cole Coolidge and Harold S. Holt to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Resins, Plastics, etc.

Resinous composition from alkyd and phenol aldehyde resins, neutral monohydroxyphenol ester of a carboxylic acid, and aromatic mono and dicarboxylic acids. No. 2,006,345. Thomas S. Carswell, Kirkwood, Mo., to Monsanto Chemical Co., St. Louis, Mo.

Production transparent thermoplastic material containing diatomaceous earth filler. No. 2,006,378. Samuel Whyte, Redhill, and William Edward Lord, Hayes, England, to Electric and Musical Industries, Ltd., Hayes, England.

Production glue and plastic material from vegetable protein material with use of caustic soda, phenol, and formaldehyde. No. 2,006,736. Louis J. Fuhrmann, Peoria, Ill., to Allied Mills, Inc., Chicago, Ill.

Process controlling molecular aggregation in the polymerization of vinyl esters. No. 2,007,557. Kenneth G. Blaikie, George O. Morrison, and Thomas P. G. Shaw, Shawinigan Falls, Quebec,, Canada, to Canadian Electro Products Co., Ltd., Montreal, Quebec, Canada.

Production cellulose nitro-acetates by partially denitrating and acetylating nitro-cellulose, using inorganic acid catalyst, sulfur dioxide, and glacial acetic. No. 2,007,789. Henri L. Barthelemy, Edward E. Huffman, and Walter B. Sellars, Rome, Ga., to Tubize Chatillon Corp., N. Y. City.

Production edible synthetic resin of combined malic acid and diethylene glycol. No. 2,007,965. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., a corp. of N. J.

Production pretreated natural resin by heating rosin with formaldehyde. No. 2,007,983. Israel Rosenblum, Jackson Heights, N. Y.

Production molded articles from urea or urea derivatives and solid polymeric aldehydes. No. 2,007,987. Otto Sussenguth, Erkner, near Berlin, Germany, to Bakelite Corp., N. Y. City.

Production resinous products, flexible, acetone soluble, by reacting polyglycerol, phthalic anhydride, and a monobasic fatty acid. No. 2,008,417. Frazier Groff, Bloomfield, N. J., to Bakelite Corp., N. Y. City.

Production bubble free product of polymerization. No. 2,008,719. Glen M. Kuettel, Roselle, N. J., to Du Pont Viscoloid Co., Wilmington, Del.

Production composition suitable for cold molding and subsequent heat hardening. No. 2,008,723. Harry P. Mills, Toronto, Ontario, Canada, to Bakelite Corp., N. Y. City.

Production resinous composition by heating protein and polyhydric alcohol in presence of alkaline catalyst. No. 2,009,029. Caryl Sly to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Production resin by heating urea primary condensation product with formaldehyde and an agent giving formaldehyde and a resinous condensation product. No. 2,009,173. Alphonse Gams, Gustave Eidmer, and Karl Frey, Basel, Switzerland, to Ciba Products Corp., Dover, Del.

Production polyhydric alcohol-polybasic acid resin containing combined polyhydric alcohol ester of aminocarboxylic acid. No. 2,009,432. Merlin Martin Brubaker, Wilmington, Del., and Raymond Einnen Thomas, Newburgh, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production molding composition of acid catalyst urea aldehyde condensation type plastic. No. 2,009,545. Carleton Ellis, Montclair, N. J.

Production resinous reaction product of formaldehyde and urea with a resin containing a sulfur bond. No. 2,009,986. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., a corp. of N. J.

Production resinous composition of resinous phenol-methylene and urea-methylene derivatives, and free from uncombined phenols. No. 2,009,987. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., a corp. of N. J.

Treatment to improve surface of cold-moldable plastic insulating compositions. No. 2,010,034. Linwood T. Richardson to Cutler-Hammer, Inc., both of Milwaukee, Wis.

Mixing inert filler with phenol-formaldehyde resin solution for use as resistor. No. 2,010,133. Sidney Bloomenthal, Merchantville, N. J., to Radio Corp. of America, a corp. of Del.

Process coloring hardened casein or protein masses using heavy metal aqueous salt solutions. No. 2,010,480. Henri Dumont, Hamburg, Germany, to firm Internationale Galalith-Gesellschaft Hoff & Co., Harburg-Wilhelmsburg (Elbe), Germany.

Production dielectric composition using mixture of benzol trichlor isomers with pentachlorbenzol. No. 2,010,495. Joe E. Moose and John E. Malowan, Anniston, Ala., to Swann Research, Inc., a corp. of Ala.

Production transparent casein plastic sheets with first coat of nitrocellulose, chlorinated diphenyl resin, and plasticizer, and second coat of chlorinated diphenyl resin and a wax. No. 2,010,517. Russell L. Jenkins, Anniston, Ala., to Swann Research, Inc., a corp. of Ala.

Production potentially reactive resinous condensation product. No. 2,010,773. Stephen P. Burke, Plainfield, and Henry M. Enterline, Elizabeth, N. J., to Combustion Utilities Corp., N. Y. City.

Production quick-drying wood filler of synthetic resin condensation product, volatile solvent, slow drying oil, filling agent, water, drying agent, and emulsifying agent. No. 2,011,041. Henry Alfred De Phillips, Philadelphia.

Production varnish resin by subjecting alkylolamine to action of alumina catalyst. No. 2,011,064. William J. Mattox to Universal Oil Products Co., both of Chicago.

Production polymerized vinyl compounds using polymerizing catalyst and catalyst-assisting metal of lead-tin-aluminum group. No. 2,011,132. Charles O. Young and Stuart D. Douglas, Charleston, W. Va., to Carbide & Carbon Chemicals Corp., a corp. of N. Y.

Production resinous compositions containing sulfur using urea and ammonium thiocyanate in aqueous solution of formaldehyde. No. 2,011,573. Carleton Ellis, Montclair, N. J., to Ellis-Foster Co., a corp. of N. J.

Production resin and resin ester conversion products by reacting boron fluoride-organic acid complex compounds with natural resins or resin esters. No. 2,011,673. Josef Binapfl, Crefeld, Germany, to I. G., Frankfort-am-Main, Germany.

Production adhesive for laminated magnetic cores. No. 2,011,698. Hans Vogt, Berlin-Dahlem, Germany.

Production water insoluble resinate by dissolving rosin in water-insoluble solvent, adding alkaline alkali metal compound to form emulsion, distilling off water and precipitating resinate in granular form. No. 2,012,125. Edward H. French, Columbus, Ohio.

Production artificial mass by polymerizing a vinyl halide in presence of styrol. No. 2,012,177. Arthur Voss and Ewald Dickhauser, Frankfort-am-Main-Hochst, Germany, to I. G., Frankfort-am-Main, Germany.

Rubber

Production rubber material by mixing rubber, vegetable fiber, soluble material, and vulcanizing agent; vulcanize, and apply solvent to remove soluble material. No. 2,006,687. Charles M. Riddock, Andover, Mass.; one-half to M. H. Rourke, Boston, Mass.

Production artificial rubber dispersion using aqueous medium in rubber and inverting with neutral water soluble peptizing agent. No. 2,006,841. Edward G. Partridge, Stow, Ohio, to B. F. Goodrich Co., N. Y. City.

Production articles from aqueous rubber dispersions. No. 2,006,862. Merrill E. Hansen, Andrew Szegvari, and Harold A. Morton, Akron, O., to American Anode, Inc., Akron.

Production rubber plasticizer using rubber or rubber-like substance and high pressure, liquid phase cracked gasoline polymer. No. 2,008,102. Julius Hyman to Velsicol Corp., Chicago, Ill.

Production colloidal dispersion of rubber to impregnate fibrous and porous substances. No. 2,008,170. Rene Botson and Julien Kamp, Audergehm, Belgium.

Production porous ebonite diaphragms for electrical batteries, etc. No. 2,008,242. Sydney James Clark to The Young Accumulator Co. (1929) Ltd., both of New Malden, England.

Compounding rubber with a non-liquid softener composition containing an oil soluble sulfonated petroleum oil. No. 2,008,554. Robert J. King and Elizabeth C. King to The Robert J. King Co., Inc., all of Stamford, Conn.

Production of chlorinated rubber dispersions. No. 2,008,558. Walter Laufenberg and Richard Schwartz, Berlin-Tempelhof, Germany, to firm Chemische Fabrik Buckau, Ammendorf, Germany.

Production vulcanizable insulating compound containing rubber, plasticizer, softener, and ultra accelerator. No. 2,008,861. Alvin N. Gray, Baltimore, Md., and Archie R. Kemp, Westwood, N. J., to Bell Telephone Laboratories, Inc., N. Y. City.

Production fuel briquettes using aqueous rubber dispersion as binder. No. 2,009,463. Robert Erwin Windecker, Painesville, Ohio.

Retarding rubber deterioration using antioxidant of diarylamine class or diarylamine alkoxy derivative. No. 2,009,480. David Craig, Akron, Ohio, to The B. F. Goodrich Co., N. Y. City.

Preserving rubber by treating with a symmetrical diphenyl substituted diamine. No. 2,009,526. Waldo L. Semon, Silver Lake Village, Ohio, to The B. F. Goodrich Co., N. Y. City.

Production antioxidant for rubber of aromatic amine substituted aliphatic. No. 2,009,530. Arthur W. Sloan, Akron, Ohio, to The B. F. Goodrich Co., N. Y. City.

Production rubber composition containing asphaltene. No. 2,009,712. Per K. Frolich, Roselle, N. J., to Standard Oil Development Co.

Production fibrous composition of fibers and rubber. No. 2,010,871. Evelyn William Madge, Wylde Green, Birmingham, and Francis James Payne, Erdington, Birmingham, England, to Dunlop Rubber Co. Ltd., London, England.

Production fabric cement of rubber latex, resin varnish, deodorizing oil, and color neutralizing agent. No. 2,011,218. Ludwig V. Glomb, Jamaica, N. Y., to Britex Awning Cloth Co., Inc., Richmond Hill, N. Y.

Retarding rubber vulcanization by heating rubber, sulfur, and an accelerator in presence of a primary amine acid phthalate. No. 2,011,219. Marion W. Harman, Nitro, W. Va., to The Rubber Service Laboratories Co., Akron, Ohio.

Production antislip rubber material. No. 2,011,496. Josef Otto Luchinger to Azo Akteingesellschaft, both of Biel, Switzerland.

Friction facing material of filterable mixture asbestos fibers, colloidal rubber emulsion, and friction augmenting material. No. 2,011,915. William R. Seigle, Mamaroneck, N. Y., to Johns-Manville Corp., N. Y. City.

Production age resisting vulcanized fiber by use of proper anti-oxidant. No. 2,011,952. Robert L. Sibley, Nitro, W. Va., to The Rubber Service Laboratories Co., Akron, Ohio.

Preserving rubber by treating with certain organic compound. No. 19,654-reissue. Marion C. Reed, Lakewood, Ohio, to The B. F. Goodrich Co., N. Y. City.

Textile, Rayon

Production fibroin salt solutions using solid urea in aqueous sodium thiocyanate, 100 gms. to 1000 ccs., heating, and adding silk waste to heated solution. No. 2,006,507. Herbert Mahn and Wilhelm Irion, Dessau in Anhalt, Germany, to I. G., Frankfort-am-Main, Germany.

Reduction luster of cellulose acetate textiles by application non-solvent mixture, 30 pts. by vol. xylene and remainder acetone. No. 2,006,540. Camille Dreyfus, N. Y. City, and William Whitehead, Cumberland, Md., to Celanese Corp. of America, a corp. of Del.

Production textile materials showing crepe effects by coating with normally water-dispersible sizing agent. No. 2,007,182. William Alexander Dickie, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Del.

Applying solution of a cellulosic body and a quaternary benzylammonium hydroxide to textile fabric to precipitate dissolved cellulose on fabric. No. 2,009,015. Donald H. Powers, Moorestown, N. J., and Louis H. Bock, Bristol, Pa., to Rohm & Haas Co., Philadelphia.

Production of regenerated cellulose for artificial silk. No. 2,009,110. William L. Hyden, Kenmore, and John S. Fonda, Buffalo, N. Y., to Du Pont Rayon Co., N. Y. City.

Production composition for oiling textile fibers. No. 2,009,612. Sigismung Fuchs and Georg Schulz, Frankfort-am-Main-Hochst, Germany, to General Aniline Works, Inc., N. Y. City.

Sizing composition for artificial silk comprising casein and organic hygroscopic material. No. 2,010,134. Herman S. Bosland, Paterson, N. J., and Frederick G. La Piana, Forest Hills, N. Y., to Stein, Hall & Co., Inc., a corp. of N. Y.

Production wetting assistant for mercerizing cotton. No. 2,010,176. Karl Brodersen, Dessau in Anhalt, Germany, to General Aniline Works, Inc., N. Y. City.

Dyeing rayon knit goods using bath containing alkali and retarding agent, then adding reducing agent and a reduced vat dye. No. 2,010,320. George Ives Putnam and Clifford Tasker Worthen to McLoughlin Textile Corp., all of Utica, N. Y.

Finishing artificial silk fabric by treating with alkaline salt of resin acid. No. 2,010,757. Walter Hamis Glover, Warwick New Road, Leamington Spa, and Frank Shedden, Coventry, England, to Courtaulds Ltd., London, England.

Production yarns and filaments of organic cellulose derivatives, using lubricant dressing of teaseed oil. No. 2,010,900. George Schneider, Montclair, N. J., to Celanese Corp. of America, a corp. of Del.

Production silk fibroin solutions. No. 2,010,918. Heinrich Fink, Wolfen Kreis Bitterfeld, Kurt Weber, Stockhausen, near Sondershausen, and Lothar von Wistinghausen, Wolfen Kreis Bitterfeld, Germany, to I. G., Frankfort-am-Main, Germany.

Production wrapping material. No. 2,011,246. William L. Hyden, Kenmore, N. Y., to Du Pont Cellophane Co., Inc., N. Y. City.

Apparatus for fiber liberation. No. 2,011,595. Lloyd D. Smiley, Dayton, Ohio; one-third to Charles D. Altick and one-third to Edward T. Turner, both of Dayton, Ohio.

Treatment textile fibers and fabrics with solution reaction product of rubber with chlorostannic acid. No. 2,011,726. Oscar F. Muller, Glen Ridge, N. J.

Production fibrous material by treating gelatinizable and ungelatinizable fibers with solvent for gelatinizing fibers. No. 2,011,914. George L. Schwartz to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Water, Sewage Treatment

Water purification by use of ozone. No. 2,009,230. Harry Buxton Hartman, Buffalo, N. Y.

Purification of water using aminated chlorinated coal. No. 2,009,754. Oliver M. Urbain and William R. Stemen, Columbus, Ohio, to Charles H. Lewis, Harpster, Ohio.

Miscellaneous Booklets

The American Academy of Political & Social Science, 3457 Walnut st., Philadelphia. "The Formation of Capital," a summary of study made by Brookings Institution of Washington, D. C.

American Institute for Economic Research, 1200 Mass. ave., Cambridge, Mass. "Inflation," by E. C. Harwood and Donald G. Ferguson. $1.00.

American Society for Testing Materials, 260 S. Broad st., Philadelphia. "Symposium on Paint & Paint Materials," from the Philadelphia Regional Meeting of March 6th. 15 papers covering many phases of paint, varnish, and lacquer industry.

Dept. of Commerce, Bureau of Foreign & Domestic Commerce, Washington. "Chemical Development in Foreign Countries, 1934," Bulletin 824, Supplement to Bulletin 823. 5c.

Dept. of the Interior, Bureau of Mines, Washington. "Limits of Inflammability of Diethyl Ether and Ethylene in Air and Oxygen," R. I. 3278, by G. W. Jones, W. P. Yant, W. E. Miller, and R. E. Kennedy.

Dept. of the Interior, Bureau of Mines. "The Rare Earths," by Alice V. Petar, Information Circular 6847. Includes market and price lists, producers, and possible buyers of rare earth materials.

Dept. of the Interior, Bureau of Mines, Metallurgical Division. "Studies on the Recovery of Gold & Silver," Report of Investigations, 3275.

Dun & Bradstreet, N. Y. City. "Behind the Scenes of Business," by Roy A. Foulke.

Georgia Dept. of Forestry & Geological Development. "Kyanite and Vermiculite Deposits of Georgia," Bulletin 46, by Louis M. Prindle.

Gummi-Und-Asbestzeitung, Vienna, Austria. "My World Trip, 1934/5," summarized reports of Dr. Ernst A. Hauser, rubber chemist, published in pamphlet form. $1.00.

Institute of Chemistry of Great Britain & Ireland, 30 Russell Sq., London, W. C. 1. "The Profession of Chemistry" (3d Edition), by Richard B. Pilcher. Interesting and complete.

International Superphosphate Manufacturers' Association, Hamburg 26, Hammer Landstrasse 245, Germany. June *Superphosphate* discusses new suction apparatus for complete separation of soil suspension from soil.

International Superphosphate Manufacturers' Association. July, *Superphosphate*, discusses experiments on soil testing carried out by the Hamburg Agricultural Experiment Station.

Scientific Proceedings of the Royal Dublin Society. "A Simple Titrametric Method for the Approximate Determination of Milk Phosphates," by G. T. Pyne. Price sixpence.

South Carolina Agricultural Experiment Station. Bulletin 304, "Analyses of Commercial Fertilizers."

Technical Publication of the International Tin Research & Development Council, Manfield House, 378 Strand, London. "The Properties of Some Special Bronzes." Series A., No. 18, by D. Hanson, and M. A. Wheeler. Reprinted from *The Journal of the Institute of Metals.*

Texas Agricultural Experiment Station, College Station, Brazos County, Texas. "Further Studies of the Effect of Sunlight on the Strength & Color of Cotton Fabrics." Bulletin 506, May.

Texas Agricultural Experiment Station. "Availability of the Phosphoric Acid of Finely Divided Rock Phosphate," Bulletin No. 509, June.

Univ. of Illinois Agricultural Experiment Station. "The Role of Zinc Sulfate in Peach Sprays," by K. J. Kadow and H. W. Anderson. Bulletin 414.

Policyholders Service Bureau of Metropolitan Life Insurance, N. Y. City. "Selecting a Plan for Compensating Salesmen."

Dept. of the Interior, Bureau of Mines. "Mineral Trade Notes" begins monthly series of economic and trade comment on metal and industrial mineral industries.

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Chemical Markets & News

Concannon Reviews Half Year Developments In Foreign Chemicals—Dorr Co. Closes Large Federal Government Contract—Monsanto Sues Dow Over Diphenyl Patents—Douglas Mentioned As Possible Presidential Candidate—Swann Now Monsanto of Alabama —August Chemical Shipments Above Seasonal Levels—

C. C. Concannon, chief of the chemical division, Bureau of Foreign & Domestic Commerce, in his monthly press summary of recent world developments, reports that the future of wood-gas as a motor fuel is not viewed very hopefully by experts in Germany, and it appears very doubtful, in their opinion, if wood-gas will ever become a serious contestant to liquid fuels or even other types of gas for powering heavy automobiles; that difficulty of obtaining foreign exchange has resulted in a marked decline in Germany's imports of tung and linseed oils, and paint and varnish manufacturers are resorting to substitutes consisting for the most part of resins mixed in solvents which are produced locally. To offset as far as possible the decline in exports of nitrogenous fertilizers, Germany has been active of late in stimulating domestic consumption. That progress is being made is revealed in a report which states that consumption during the crop year '34-35 advanced a further 10% to reach within 3% of the all time high record figure of '28-29; Russian exports of certain industrial chemicals during the 1st 5 months of the current year were substantially less than those of the corresponding period of '34, with the exception of sodium bichromate and sodium sulfate.

British Dyes—New Zealand Gums

Moderate improvement in the British dyeing industry during the 2nd quarter of '35 resulted in an expansion of dyestuffs consumption, according to a report from Bradford. Tendency to replace imported colors with those of British manufacture continues, report states.

New Zealand kauri gum trade continues to follow the unsatisfactory trend of recent years with the current demand chiefly for poorer grades which are being used principally in the manufacture of linoleums, a report from Auckland states.

Canada Increases Chemical Production

Canadian production of heavy chemicals increased 30% in value in '34. Twelve firms operated 16 plants of which 10 are located in Ontario, according to advices from Ottawa.

Prospects are for a further narrowing of the international nitrogen fertilizer trade by the establishment of a synthetic industry in Spain. At present Spain depends largely upon Germany for its nitrogen requirements. Should the Spanish plan prove successful it will mean the loss of still another of Germany's few remaining foreign markets for nitrogen.

Stimulating German Trade

Latest plan for stimulating Germany's export trade is to levy a tax, scaled from 1 to 4% on the turnover involved, upon all industrial production intended for domestic consumption. It is understood that the levies are to be paid monthly against a yearly allotment, and it is intended to build up a fund of around one billion marks from which subsidies will be granted to exporters in sufficient amounts to enable them to lower export quotations to levels competitive with foreign countries. As German chemicals are already highly competitive in foreign markets it is believed that even a small subsidy in this field will result in a considerable increase in Germany's chemical export trade.

Despite the introduction of this and other numerous schemes designed to stimulate foreign trade, including bounties, barter, and exchange manipulation, Germany's foreign chemical trade, both imports and exports, continued to decline in value during the 1st half of the current year. Imports of chemicals and allied products declined to a greater extent than exports, falling 15% to 110,700,000 marks, compared with the 1st half of '34, while the export decline was 5% to a total value of 303,000,000 marks. Notwithstanding monetary declines, many items imported and exported registered quantity increases, indicating lower price levels.

While most import items declined in quantity, receipts of varnish gums, particularly gum lac and shellac, phosphate, and borax were heavier. Receipts of drying oils, including tung and linseed oils, were 37% lower than in the 1st half of '34, due to the difficulty of obtaining exchange to cover purchases of these items, and paint and varnish manufacturers are resorting to substitutes consisting for the most part of resins mixed in solvents which are produced locally.

Principal German Chemical Exports

Among industrial chemical exports, outstanding items registering quantity gains included sodas, especially caustic, sodium

At the San Francisco meeting A. C. S., President Adams, Illinois, presents Priestley Medal Award to Illinois' beloved emeritus director of the University's laboratories, Dr. William A. Noyes, highest honor of the Chemical Society and only bestowed once every 3 years, and the Society's award for outstanding research in pure chemistry to Dr. Raymond M. Fuoss, Brown.

sulfate, silicate, sulfides, and methanol. Synthetic camphor was outstanding among Germany's chemical exports which sustained losses.

Removing Silt

Continuous mechanically-operated processing equipment of a type which was developed chiefly within the chemical industry has been selected by the Bureau of Reclamation of the Dept. of the Interior for the world's greatest river desilting plant to be built on the Colorado River, 15 miles northeast of Yuma, Arizona, at the Imperial Dam, about 250 miles below the Boulder Dam. 72 Dorr Thickeners, each 125 ft. in diameter, will be used to remove between 50,000 and 70,000 tons of silt daily from a flow of about 8 billion gals. a day. Clarified water will flow 210 miles through the All American Canal to irrigate 1,000,000 acres of arid land in California. The silt removed will be returned to the river below the diversion dam.

Behind this project, the contracts for which have just been let, lie 6 years of investigations, conducted jointly by the Federal engineers and the research and the Dorr development staffs, both at the site on the Colorado River and at the Dorr Company's experimental station, the Westport Mill, at Westport, Conn. The desilting plant, based on these studies, will require about 2 years to complete, and is estimated to cost close to $38,500,000.

Transplanting the Colorado

At one point in the investigation 35 tons of Colorado River silt were shipped from Yuma, Ariz., to the Dorr laboratories at Westport, Conn., where for several months a Dorr Clarifier treated and retreated 3,600,000 gals. of water and 24 tons of solids a day under the conditions anticipated in practice. This semi-commercial scale work, 2500 miles from the site of the proposed desilting plant, developed the basic engineering factors on which the final plant design was made.

Construction and operation of this project is under the jurisdiction of the Denver, Colo., office of the Federal Bureau of Reclamation, R. F. Walter, chief engineer, and J. L. Savage, chief designing engineer. Plans developed by the Reclamation Bureau engineers were reviewed by a board of consulting engineers consisting of Charles P. Berkey, Dr. W. F. Durand and Dr. Louis C. Hill.

Dr. John Van Nostrand Dorr of N. Y., president of The Dorr Co., designers of the mechanical desilting equipment, is a past president of the A. I. Ch. E., a recipient of the James Douglas Gold Medal of the American Institute of Mining & Metallurgical Engineers, and one of the outstanding members of the equipment industry of this country and known internationally for his achievements.

COMING EVENTS

National Machine Tool Builders Association Exposition, Exposition Hall and Public Auditorium, Cleveland, Ohio, Sept. 11-21.

Rocky Mountain Section, American Water Works Association, Annual meeting, Brown Palace Hotel, Denver, Colo., Sept. 16-18.

Technical Association of the Pulp & Paper Industry, fall meeting, Atlantic City, week of Sept. 16.

New England Water Works Association, Providence-Biltmore Hotel, Providence, Sept. 17-20.

Salesmen's Association of the American Chemical Industry, Final Golf Party, Pomonok Country Club, Flushing, L. I., Sept. 17.

National Industrial Advertisers Association Convention, William Penn Hotel, Pittsburgh, Pa., Sept. 18-20.

Glass Container Association, Semi-Annual Convention, Traymore, Atlantic City, Sept. 19-20.

Atlantic Coast Premium Exposition, Hotel Pennsylvania, N. Y. City, Sept. 23-27.

Chemical Club of Philadelphia, Golf Party, White Marsh Valley Country Club, Sept. 25.

Seventeenth National Metal Congress and Exposition, Chicago, Ill., week of Sept. 30.

Fifteenth Fall Meeting, American Welding Society, Palmer House, Chicago, Sept. 30-Oct. 4.

New York State Sewage Works Association, Joint meeting with New England Sewage Works Association, Hotel Van Curler, Schenectady, N. Y., Oct. 4, 5.

American Public Health Association, 64th Annual Meeting, Hotel Schroeder, Milwaukee, Wis., Oct. 7-10.

Electrochemical Society, semi-annual meeting, Washington, D. C., Hotel Willard, Oct. 10-12.

Pennsylvania Water Works Association, 40th Annual Meeting, Haddon Hall, Atlantic City, week of Oct. 14.

24th National Safety Council, Louisville, Oct. 14-18.

American Gas Association, Palmer House, Chicago, Oct. 14-17.

American Society Municipal Engineers and International Association Public Works Officials, Netherland Plaza Hotel, Cincinnati, Ohio, Oct. 14-15.

South Section, American Water Works Association, Houston, Texas, Oct. 14-17.

Fourth Annual Drug Trades Exposition, Grand Central Palace, N. Y. City, Oct. 15-17.

Minnesota Section, American Water Works Association, St. Paul, Minn., Oct. 18-19.

Laundryowners' National Association, Hotel Traymore, Atlantic City, Oct. 21-24.

Oil Trades Association of N. Y., Annual Banquet, Oct. 22, Albert J. Squier, chairman.

Tanner's Council of America, fall meeting, Palmer House, Chicago, Ill., Oct. 24-25.

Second Annual Convention, National Paint, Varnish and Lacquer Association, Mayflower Hotel, Washington, Oct. 30-Nov. 1.

In connection with the convention the "Paint Show" will be held Oct. 27-29 at Washington.

13th Midwest Regional A. C. S. Meeting, Brown Hotel, Louisville, Oct. 31-Nov. 2.

North Carolina Section, American Water Works Association, Durham, N. C., Nov. 4-6.

Missouri Valley Section, American Water Works Association, Fort Des Moines, Ia., Nov. 6-8.

Virginia Section, American Water Works Association, Hotel Roanoke, Roanoke, Va., Nov. 7-8.

American Petroleum Institute, Biltmore Hotel, Los Angeles, Nov. 11-14.

American Institute of Chemical Engineers, Columbus, Ohio, Deshler-Wallack Hotel, Nov. 13-15.

International Acetylene Association, Hotel Cleveland, Nov. 12-15.

Working Association for Combating & Preventing Corrosion, Berlin, Nov. 18-19.

Exposition of Chemical Industries, Grand Central Palace, N. Y. City, Dec. 2-7.

American Association of Textile Chemists and Colorists, Annual Meeting, Chattanooga, Tenn., Dec. 6-7.

Sixth National Organic Chemistry Symposium, Rochester, N. Y., Dec. 30.

National Shoe Retailers Association, and National Boot and Shoe Manufacturer's Association, Joint Convention and Style Show, Chicago, Ill., Jan. 6-9, 1936.

Fourth International Heating and Ventilating Exposition, International Amphitheatre, Chicago, Jan. 29-31, 1936.

Sixth Packaging Exposition, Hotel Pennsylvania, N. Y. City, Mar. 3-6, 1936.

American Ceramic Society, 1936 Annual Meeting, Columbus, Ohio, Mar. 29-Apr. 4.

American Chemical Society, 91st Meeting, Kansas City, Mo., Apr. 13-17, '36.

Chemical Engineering Congress, Central Hall, Westminster, England, June 23-27, 1936.

Litigation

¶ United Chromium Wins Important Plating Decision—Courts To Decide On Diphenyl Litigation Between Monsanto and Dow

Judge Edwin S. Thomas, U. S. District Court, in a decision filed in Hartford, Conn., Aug. 8, ruled that G. M. C., New Departure Manufacturing, Bristol, Conn., and Bassick Co., Bridgeport, had infringed on a patent held by United Chromium, for electrodepositing chromium.

Holding that the patent is valid, Judge Thomas issued an injunction restraining defendants from further alleged infringement and referred the case to a special master to make an accounting of profits and fix damages. Patent was issued in '26 to Prof. Colin G. Fink, Columbia electrochemical authority, and was assigned to United Chromium by him.

Who Owns Diphenyl?

Long awaited patent infringement suit of Swann Research (now Monsanto) against Dow interests for ownership of basic diphenyl patents has come before Federal Judge Arthur J. Tuttle, U. S. District Court, Bay City, Mich. Dow seeks to avoid a perpetual restraining injunction and an accounting of profits as Swann's allegation of process infringement finally comes to trial.

Associations

¶ Agricultural Insecticide Group Rewrites By-Laws—Chemical Section of the Safety Council Elects New Members—

Agricultural Insecticide and Fungicide Association, meeting last month in Spring Lake, rewrote the by-laws to conform with the F. T. C. fair trade practices.

Following directors have been elected for the year beginning Sept. 1:—R. N. Chipman, Chipman Chemical; J. B. Cary, Niagara Sprayer & Chemical; H. P. Manfield, Grasselli; D. E. Connolly, Ansbacher-Siegle; G. E. Riches, Bowker Chemical; A. H. Boyd, Commercial Chemical; A. W. Steudel, Sherwin-Williams; G. P. Hitchcock, Nichols Copper; R. E. Demmon, Stauffer Chemical; G. L. Leonard, Tobacco By-Products & Chemical; Frederick Sykes, Union Oil, and S. B. Penick, Sr., S. B. Penick & Co.

In the Interest of Greater Safety

The National Safety Council Chemical Group welcomes following new members: Ansul Chemical, Marinette, Wis., Armstrong Paint & Varnish, Chicago; Electric Smelting & Aluminum, Lockport, N. Y.; Lee Lime, Lee, Mass.; Pioneer Flintkote; The Studebaker Corp.; and Hiram Walker & Sons, Peoria, Ill.

"Oilers" Golf and Banquet

Oil Trades Association of N. Y. held its annual outing Sept. 10. Annual banquet will be held Oct. 22 with Albert J. Squier as chairman.

Personal

¶ Douglas Mentioned As Presidential Candidate — Little and Hazard Wills Probated—Other Notes—

Press reports of the possible formation of a "Constitutionalist" party for the '36 campaign mention Lewis W. Douglas as among the likely presidential candi-

—Globe Photos

"I'm not going to run for anything."

dates to act as standard bearer. Movement is the "child" of Bainbridge Colby, close associate of William R. Hearst. Recent visit of Douglas to the Hearst California headquarters more than likely was the basis for the press statements. Later, Hearst issued a statement suggesting "Al" Smith.

Associated Press finally caught up with Mr. Douglas on Aug. 30 as he was leaving for a tarpon fishing trip with a group of Southern Alkali officials at Corpus Christi. Said the Cyanamid V.-P., with an unmistakable air of finality:

"I'm not going to run for anything."

Interesting Wills

Arthur D. Little, whose will was filed for probate Aug. 12, left his entire estate to his widow, Henrietta Little of Brookline, with the exception of his controlling interest in Arthur D. Little, Inc., pioneer industrial research firm of Cambridge, which he directed to be held in trust for the benefit of M. I. T. Dr. Little, chairman of the board of Arthur D. Little, Inc., and internationally famous chemist, died Aug. 1. His widow and M. I. T. share in the income from the stock held by the trust, with the ownership of the controlling interest in Arthur D. Little, Inc. ultimately going to M. I. T.

Late Mrs. Dora G. S. Hazard, "The First Lady of Syracuse" and noted philanthropist, disposes in her will an estate estimated at $500,000.

Except for a few specific bequests of $1,000 each to nephews, nieces and old family employes, entire estate is bequeathed to her 3 daughters and son.

Mrs. Hazard's will does not dispose of the Hazard fortune built up by the late Frederick R. Hazard, one of the founders of the Solvay Process.

At his death on Feb. 28, '17, the industrialist and philanthropist left property estimated at from $4,000,000 to $5,000,000 in 2 equal trust funds. One gave the income for life to Mrs. Hazard; the income from the other was to be divided equally among the 4 children.

Mainly About People

Mr. and Mrs. George W. Merck last month entertained at the performance aboard the Showboat Periwinkle, near Canoe Place Inn at Hampton Bays, Long Island, in honor of Mr. and Mrs. James J. Tunney who were visiting them at the Merck summer home at Quogue. Afterward the Mercks gave a supper at Canoe Place.

Dr. Charles M. A. Stine, du Pont Technical director, returns to Wilmington with his wife and their 2 daughters following summer stay at Cape May, N. J.

William D. Neuberg's friends are rejoicing in his recovery from a recent appendix operation. Mr. Neuberg is a chemical importer with offices at 441 Lexington ave., N. Y. City, and is a specialist on tartaric acid and tartar chemicals.

Colonel and Mrs. Frederick G. Zinsser spent most of the summer at Bar Harbor, Me.

Dow's Dr. John A. Gann and Manley E. Brooks attended the convention of the American Foundrymen's Association at Toronto. Dr. Gann, noted magnesium authority, delivered a paper—"Founding Magnesium Alloys."

Capt. Joseph Battley, former NRA chemical administrator, is connected with PWA in N. Y. City.

William A. R. Welcke, Fritzsche Bros. treasurer, vice president and director, completes 50 years active service. Mr. Welcke plans to remain with the firm following removal to the Port Authority Bldg., in October.

August Merz, Calco, accompanied by Mrs. Merz, journeyed to the Coast and on the return will visit August Merz, Jr., at Gilman, Colo.

H. L. Dahm, a G. S. Robins v-p., accompanied by Mrs. Dahm, was on the Coast last month for the A. C. S. convention.

N. J. Hooper, a Sharples Solvent v-p, will now reside in Philadelphia.

Marriages

W. Newell Wyatt, Warner Chemical, to Miss Lois Keiper of N. Y. City on Aug. 29 at Trinity Chapel. Couple spent their honeymoon at Geneva, N. Y.

Rupert C. Watson, Ungerer & Co., and formerly managing editor of CHEMICAL MARKETS, to Miss Mary Giblin. Miss Giblin is secretary to J. W. Casterton, chief P.A. for Standard of N. J.

Miss Amy Birdsall Hill, arsenic specialist with African Metal's chemical dep't, to Lawrence Hugh Bergdahl, on Aug. 17.

E. V. Linson, Bradley & Baker, and Miss Dorothy Kenny, on Sept. 14.

Births

Reynolds Girdler (Binney & Smith), and his wife, a son, at N. Y. Cornell Medical Center, Aug. 14. Mrs. Girdler is the daughter of Allan F. Kitchel, Binney & Smith vice-president.

"The Gangplank"

¶ Chemical Executives Returning In Large Numbers — Reichhold Inspects Beck, Koller Foreign Division — Blanc Reports On Acticarbone Installations—

Homer H. Ewing, du Pont European manager, returns in the *Manhattan* with an optimistic report of U. S.-European trade relations. Mr. Ewing, who accompanied Lammot du Pont, du Pont president, on his recent foreign tour, also feels that England is leading other nations in licking the depression. He points out that Englishmen from all income groups are more heavily taxed than in the U. S., but feels it would be a mistake for this country to follow England's example. Mr. Ewing feels that "export troubles" represent Europe's greatest problem and that European desire for war is greatly overrated.

Cyanamid's Landis His Only Rival

Beck, Koller's European commuting president, H. Reichhold, left in the middle week of last month and will return late in September. He reports completion of the new warehouse and that work is progressing satisfactorily on 3 new laboratories, new docks, and installation of new cooling pans. While abroad he will select a site for a Paris plant and visit other European branches.

Foreign Solvent Recovery Progress

Concluding a 5 week inspection tour of Acticarbone installations in Belgium, England, and France, M. L. Blanc, Acticarbone president, returned in the *Normandie*, Aug. 10th. He reports progress in solvent recovery in foreign cellulose and dry cleaning industries, and increased alcohol recovery from carbon dioxide entrainments in fermentation vats. In general, Mr. Blanc believes European

conditions are on the upgrade, despite recent world economic disturbances.

Reese Sails

Dr. and Mrs. Charles L. Reese left early in August for a European trip in the *Manhattan*. Dr. Reese was president of the A. C. S. last year and directed du Pont's research for years.

Others Noted on Steamship Lists

Du Pont's publicity director, Charles K. Weston, accompanied by Mrs. Weston, returned in the *Pennland* recently.

William S. Gray, Sr., returned in the *Aquitania* from a 6-weeks' tour of the continent.

William F. Hencken, treasurer of William S. Gray & Co., is back from an extensive Orient trip. Mrs. Hencken heads the Garden Clubs of America.

W. J. Hough, the well-known Chicago paint raw material jobber, returned last month after a 2 months' tour of Europe. His wife and son accompanied him.

Another well-known raw material dealer returning—A. G. Watt, of Cleveland, reports rise in construction and alterations, particularly in Berlin.

E. L. Luaces, consultant, specializing in activated carbon processes, sailed for Cuba in the *Oriente* Sept. 7 for an extended business and pleasure trip. He will make a special study of distilling plants in Cuba in connection with a new activated carbon process now being introduced in that field.

Companies

¶ *Monsanto Changes Name of Swann Division—DuPont's Startling Display — Webb's Diamond Jubilee—Brown Defaults—*

Monsanto Chemical of Alabama is the new designation for Swann Chemical, latest Monsanto acquisition. Administrative and sales offices of the Alabama subsidiary, together with those of another former Swann property, Provident Chemical, have been moved to Monsanto's new administration building in St. Louis. Sales offices of a 3rd former Swann company, Wilckes, Martin, Wilckes, have been consolidated with Monsanto's N. Y. office.

A new sales division, the Swann Products Division, has been created to handle sales of all products of the former Swann companies. Henceforth these products will be sold under Monsanto's name. District sales offices are retained at Birmingham.

Largest Display

Du Pont's "The March of Chemistry" at the Eastern States Exposition will be the largest single display ever shown at an annual exposition. Twenty-one du Pont manufacturing divisions will show products and processes as an indication of recent practical chemical advances.

"Emporium of Light"

James A. Webb & Son, since 1915 a U. S. I. subsidiary, is celebrating its diamond jubilee. Webb's Emporium of Light was started in N. Y. City in 1835 to make alcohol and camphene for use in portable lights. For years it was the largest pure alcohol producer, and its product, "The Standard of Quality" was internationally known.

"Solka" Fails to Save

Brown Co., $74,000,000 paper manufacturing concern, announced in a statement to bondholders Sept. 2 it was unable to meet interest due on its bonds and would file a petition for reorganization under the new National Bankruptcy Act. Company, which operates mills in Berlin, N. H., and at La Tuque, Que., and holds extensive timberlands in this country and in Canada, is one of the largest paper manufacturing companies in the East. In recent years it has been active in pioneering new forms and uses for cellulose. Solka is used for such wide variety of uses as linings for shoes and molding material for radio cabinets. Its general offices are in Portland. Herbert J. Brown is president.

Approximately $21,425,000 in bonds was affected by the decision. Issues include two of 5½% maturing in '46 and '50 and secured by 1st mortgages.

Interesting New Specialties

Pennsylvania Coal Products, Petrolia, Pa., offers new, improved color stabilizer and antioxidant for specialty rubbers, designated as P. C. P. Chemical No. 5. Pennsylvania Coal Products is internationally known as a leading producer of resorcin, pyrocatechol, phloroglucinol, and other coal-tar chemical specialties.

Who Has the Button Business?

Catalin Corp. estimates 1935 "Catalin" consumption in button manufacture at 1,000,000 lbs. Though this poundage represents an entirely new development of the past 2 years, Catalin Corp. officials feel they are supplying only 1% of total button fabrication business.

Company News Flashes

Alfred Crump sues Berkshire Chemical, Bridgeport, for $10,000, alleging damaged health resulting from clouds of finely powdered castor bean pumice floating from the Berkshire plant into his office.

Allegheny Steel acquires exclusive U. S. rights from British interests to manufacture and sell "Mumetal," new magnetic nickel, copper, iron alloy steel. New alloy may be used in radio, instrument and sound apparatus transformers, to produce greater tone accuracy.

Beacon Co., Boston, adds Fred A. Jensen, 510 N. Dearborn st., Chicago, and B. H. Roettker Co., 1401 Union Central Bldg., Cincinnati, to its list of sales representatives.

Oklahoma Portland Cement, Ada, Okla., announces operation of large by-product solid CO_2 plant to utilize carbon dioxide from kiln stack gases.

National Cellulose, new paper specialties producer with N. Y. City offices at 366 5th ave., and a plant at Baldwinsville, N. Y., leases former Syracord Co. building in Syracuse. Operations at new plant begin about Nov. 1st with J. J. Sullivan, Baldwinsville plant manager, in charge.

A. E. Staley Mfg. Co., laundry starches, places advertising account with Gardner Advertising Co., St. Louis.

Allan Chemical establishes solvent-recovery plant at 730 E. 9 Mile Rd., Ferndale, Detroit, for use by paint and automotive industries.

American Cyanamid & Chemical appoints Herron & Meyer, 38 S. Dearborn st., Chicago, as exclusive midwest sales agent to handle full line of rubber chemicals.

Riverton Lime & Stone, Riverton, Va., incorporates to take over former Riverton Lime Co.

Knoxville Lime Mfg. Co., Asbury, Tenn., incorporates to take over Knoxville Sand & Lime Co.

M. M. Kraft organizes The Kraft Chemical Co., 917 W. 18th st., Chicago, to act as manufacturer's agent and distributor for paint, varnish and allied industries.

Owens-Illinois is erecting Packaging Research Laboratory at Toledo, built entirely of glass block.

Fires

¶ *Chemical Industry Report On Losses For August—Death Results From Explosion—*

Fires in chemical plants reported during the last month were: F. E. Schundler, Long Island City plant, Aug. 5th; Metals Disintegrating Co., Townley, N. J., by explosion, 15th; Mallinckrodt Chemical, Jersey City plant, 17th, small damage; Purity Paint Products, Brooklyn, 18th; Zenith Chemical, Salisbury, N. C., 27th, $30,000 minimum damage; Dow Chemical, small blazes on 26th & 27th.

Still other fires reported last month include explosion at Orenda plant, Wilmington, Ill., killing Chief Chemist Carl Rose, 35, and seriously injuring 4 others, on the 29th; Calco, $1,000, 24th; and Miller Chemical, Omaha, Neb., destroying $15,000 wholesale chemical and drug goods stock, 28th.

Plants

¶ DuPont's Dye Works Wins Safety Medal—Dow Has Women Ph.D.'s — Galt Visits Corpus Christi—Other Notes—

At a safety rally held Aug. 29 at du Pont's Deepwater, N. J., dye works, 600 men and supervisors of the construction department saw 2 of their group publicly honored for having saved a life at the plant.

Highest safety honor—President's medal of the National Safety Council.

Story goes back to Feb. 6, when Reuben Gardner, a cement finisher, was troweling a concrete slab enclosed in hanging tarpaulins to keep in the warmth provided by a battery of "charcoal smudge pots." Carbon monoxide gas accumulated in the enclosure and Gardner was asphyxiated. Presence of mind and quick use of resuscitation methods taught them at the plant, enabled Harry P. Sillery and Robert K. Mason to perform their life-saving task successfully. Sillery was awarded the National Safety Council President's medal and Mason the 'Certificate of Valuable Assistance."

Dye Works Construction Department, of which Sillery and Mason are employes, sponsors rigid safety practices and has a practical follow-up system. This department of the du Pont Co., of which O. R. Ames is superintendent, has gone 488 days and over 1,250,000 man hours without a time-losing accident.

Dow Chemical Has Woman Ph.D.

Distinction of being sole woman doing research work for Dow at the Midland plant as well as one of only 2 feminine Ph.D.'s at Midland is carried by Mrs. Wesley Carl Stoesser, who may be found in business hours in the midst of test tubes and other apparatus in the physics laboratory.

With John J. Grebe, D.Sc., director of physical research for Dow, Mrs. Stoesser is co-author of an article in the August issue of "World Petroleum," a N. Y. and London publication devoted to the oil industry.

Though professionally there are 2 Doctors Stoesser, outside of the laboratory there is only one, when plain "Mrs." for herself is not only sufficient, but far less confusing, says Mrs. Stoesser.

Second 100% Ph.D. family in Midland consists of Dr. and Mrs. Luther Behrenke.

Inspection and a Little Fishing

Highlights of last month's news from the Corpus Christi plant of Southern Alkali: delayed visit of President Galt took place. According to reports he thoroughly enjoyed the trap shooting and fishing. The Bull liner Dorothy left July 27 with the largest shipment of alkali yet made by water from a plant site.

Checked At The "Gate"

Dow's patent department head, Thomas Griswold, Jr., described for the Midland Rotary Club last month the workings of a patent division in the chemical field.

Demanding reinstatement of 21 employes who were laid off, 375 strikers picketed the plant of Davison Chemical at Curtis Bay, Md., last month.

Dow officials had wooden models prepared of the new office building to show what the final effect will look like when completed. Rapid progress is being made in the construction of the new chemical laboratory.

Solvay adds 127 acres to its Baton Rouge plant, but no immediate construction is contemplated.

Carbide & Carbon finishes 3rd in the Kanawha Valley Baseball Twilight League with du Pont's Belle plant team first.

Georgia Kaolin, Dry Branch, Ga., installs 4th Christie drier.

Du Pont uses —100° C. to separate mono-vinyl acetylene from acetylene gases in the synthetic rubber process. This is the lowest of industrially used temperatures.

Samuel Trainia, Mutual Chemical employee, sustains possible fracture of right leg in a pit fall.

Peter Malloy, former employee, sues White Tar Co., Kearny, N. J., disinfectant producers, alleging injuries resulting from insufficient protection.

Pyrites Co. resumes work at its Christiana river plant, following reconditioning operations begun in June. Two hundred men are employed with possibility of employment for 100 more.

Keery Chemical's Cadosia & Hazel acid plants resume production after 3 months lay-off.

Plant Romance

Clifton Rice, Miss Rose Data, 5th, both employed at du Pont's Deepwater dye plant.

Minerals Book Ready

Bureau of Mines announces *Minerals Yearbook*, 1935. Copies may be purchased for $2.00 from Superintendent of Documents, Government Printing Office, Washington. New chapters on minor non-metallic minerals and miscellaneous commercial gases are included.

Construction

¶ Business Pick-Up Reflected In Larger Number of Proposed Plant Additions—

Carbide & Carbon plans further addition to the South Charleston "Vinylite" plant, states Plant Manager J. M. Topham. Construction will begin in several months though size and cost details have not yet been announced. In addition, Carbide is renovating recently-purchased Calco plant (just taken over from Westvaco) nearby for equipment and materials storage purposes.

Nickel Researches in Copper

International Nickel of Canada plans construction of copper research laboratory at Copper Cliff, Ont. Laboratory will resemble Bayonne, N. J., unit, and copper refining process improvements will be studied. New work will supplement industrial nickel investigations of past 10 years, says general manager Donald MacAskill.

Additional Construction

General Aniline starts $100,000, four-story, brick, concrete, and steel plant at the Rensselaer Dye Works to meet increasing foreign and domestic dyestuffs demands.

Du Pont announces immediate construction of paint, varnish, and lacquer plant in South San Francisco.

Russell Engineering, Detroit, requests option to purchase Roane Iron & Coal properties at Rockwood, Tenn., planning to convert the plant for solidified carbon dioxide production.

Roy Rigsby and Morley Griswold discuss plans to establish illuminous paint plant in Reno, Nev.

J. A. Tumbler Laboratories, Baltimore, begins construction of new 4-story plant to replace place of business destroyed by fire 2 months ago.

Reconstruction begins on George F. Siddall soap and chemical plant, Spartanburg, S. C. Plant was destroyed by fire, July 4.

Carbon Dioxide & Chemical, Seattle subsidiary of Fulton Petroleum, enlarges plant facilities for solid carbon dioxide production.

Standard Wholesale Phosphate & Acid Works starts one-story addition to Curtis Bay plant for storage and trucking purposes.

Du Pont grants option on property of former Roessler & Hasslacher St. Albans chemical plant to H. L. Lambert, proposed Mountain State Distillery representative. New distillery will use about $2,500 worth of grain daily.

Krebs Pigment & Color plans 4 additions to present units at its Baltimore plant.

Molybdenum Corp. of America lets contract for an addition to its Washington, Pa., plant.

Stewart Paint, Minneapolis, plans new $50,000 one-story plant.

Texas Co. begins work on 2 lubricating oil units at Port Arthur. New $3,000,000 plant will employ furfural solvent refining process and the benzol dewaxing method.

Sowega Fertilizer meets heavy increase in business with plans for new building and installation of additional equipment. Expansion will double plant capacity and provide increased storage space.

General Soap, Grand Rapids, will spend $50,000 on alterations and new equipment at Cleveland plant.

American Petro Chemical, Detroit, breaks ground for 1st 500 barrel unit of its 2500 barrel daily capacity plant.

Mechling Bros. starts construction of new office building at Camden, N. J.

Zenith Chemical will rebuild its Salisbury, N. C., plant, destroyed by fire Aug. 27.

Monsanto awards contracts to Fruin-Colnon Contracting Co. for alterations and improvements at the St. Louis plant.

Foreign

¶ *Leading German Chemical Firms Report Higher Profits In '34—Other Foreign Notes—*

Schering-Kahlbaum A. G., Berlin, an outstanding factor in the German pharmaceutical industry and well known supplier of synthetic camphor, reported a substantial increase in net earnings in '34 and increased dividends from 6 to 8%. Export demand for synthetic camphor increased substantially in '34, compared with the preceding year, but since the beginning of '35 a notable decline has been recorded.

Kali Chemie A. G., 4th or 5th largest chemical organization in Germany, reports that it was able in '34 to extend somewhat the marked trade gains recorded in the preceding year. Kali Chemie, originally a potash fertilizer concern, now produces a wide line of additional chemical products.

Short And To The Point

European Pulp Cartel meets soon to discuss replacement of present production limitation system by new system of fixed export contingents for each pulp-exporting Cartel member.

Yamakawa Seiyaku K. K. produces bromine by direct brine electrolysis.

Spanish Government creates central sales bureau for naval stores for both domestic and export business.

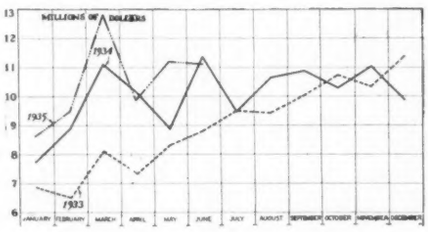
Ssojusgas Trust reports successful experimental work on production of formaldehyde from natural gas.

Electric & Electrochemical of Caffaro, Milan, Italy, applies for governmental permission to manufacture chlorinated rubber, chloronaphthalene, chlorinated oils and resins, and derivatives. Construction will begin following confirmation from the government.

Foreign Trade

¶ *Our Chemical Imports Increase 5% In First Half of '35—Paint and Naval Stores Exports Gain—*

Imports of chemicals and allied products were well sustained during the 1st half of the current year with many items, particularly raw materials, registering substantial increases, according to C. C. Concannon, Chief of the Commerce Dept.'s Chemical Division.



Graphic study of chemical export trends.

Value totalled $57,527,400 during the 1st half, an increase of almost 5% compared with the corresponding period of '34, while exports of chemicals and allied products during the 1st 6 months amounted to $63,118,000.

Fertilizers, consisting in large part of nitrates and potash, headed the chemical import list and accounted for almost one-third of the total of all chemical imports during the first half. Total value of fertilizers and fertilizer materials reached $18,290,000 during the period compared with $17,000,000 for the 1st half of '34, an increase of approximately 7½%. Industrial chemicals, however, declined 15% in value to $8,262,000, due in part to lower prices.

Coal tar products, consisting of dyes, color stains, creosote oil, etc., increased 22% in value to $6,821,000 compared with the 1st half of '34. In this classification imports of colors, dyes, stains, etc., increased approximately 13% both in quantity and value to $2,269,400 lbs. valued at $2,905,500.

Imports of gums, resins, and balsams, which cover a wide variety of crude and semi-manufactured materials including varnish gums, shellac, and camphor were valued at $5,204,375 during the '35 period compared with $4,888,000 for the 1st 6 months of '34.

Value of Chinese tung oil imports advanced sharply to $4,200,250, representing an increase of 60% over the 1st half of '34, due very largely to higher prices as the quantity increase amounted to only 12%.

Receipts of carnauba increased more than 57% in value to $1,685,500 compared with the 1st half of last year. Other items of chemical and allied product imports registering increases over the 1st half of '34 included crude drugs up 12% to $3,242,400; cod liver oil, 21% to $1,370,200; paint materials, 12% to $1,024,700; soaps and toilet preparations, 5% to $1,617,675.

Carbon Black Exports Expand

Our exports of paints and paint materials, particularly carbon black and ready mixed paints, continued active during the 1st half of the year with both quantity and value registering substantial increases over the corresponding period of last year. Exports of such products were valued at $7,860,800 compared with $6,622,000 for the '34 period, an increase of approximately 18%.

In point of value, chemical pigments led the list with export shipments totaling approximately 81,000,000 lbs., valued at $4,187,500, a 23% increase both in quantity and value over the 1st half of '34 when exports amounted to 65,679,000 lbs., valued at $3,402,300. Among chemical pigments, carbon black was the most important item, amounting in the 1st half of '35 to 68,430,000 lbs., valued at $3,133,500, compared with 54,130,000 lbs., valued at $2,420,500, for the 1st 6 months of '34.

Exports of ready mixed paints continued to advance reaching 1,119,600 gals., valued at $1,921,400, during the 1st half of the year compared with 878,760, valued at $1,575,600, for the corresponding period of the preceding year, an increase of 27% in quantity and 22% in value.

Other items registering increases during the first half of '35 included mineral pigments which advanced 10% to $233,700; lacquers, 3% to $805,350; and varnishes, 18% to $262,300.

Naval Stores Figures Encouraging

Our exports of naval stores, gums, and resins were valued at $7,772,600 during the 1st half compared with $7,110,560 for the corresponding period of '34, an increase of 9%, due largely to heavier shipments of rosin. Rosin shipments to foreign markets amounted to 559,570 bbls., valued at $4,718,700, compared with 489,800 bbls., valued at $4,010,400, for the 1st half of '34, an increase of 14% in quantity and more than 17% in value. Turpentine exports, however, showed little change in quantity, remaining at slightly over 5,000,000 gals., but the value

declined about 5% to $2,489,700 compared with the 1st half of '34 when exports reached $2,617,135.

Traffic

¶ *Interstate Motor Traffic Comes Under I.C.C.—Eastman Is Chairman—Rulings—Petitions—*

I. C. C. names Joseph B. Eastman as chairman of a new division which will administer the Motor Carrier Regulatory Act.

Act provides for the states to maintain full authority over interstate transportation. Interstate rates will be supervised by Eastman and 2 other commissioners to be named later.

Regulations require common carriers to establish just and reasonable rates without discrimination in rates or service. Common carriers must obtain certificates of public convenience and necessity before they may operate, but those in business prior to June 1, '35, will receive these as a right. Vehicles used exclusively for carrying livestock, fish, or agricultural products, or in the distribution of newspapers are exempt, as are those controlled and operated by farm cooperative organizations. All carriers, including those otherwise exempt, are subject to regulations with respect to the qualifications and maximum hours of service of the employees and the safety of their operations and equipment.

Sulfuric and Coal

Industrial Rayon, Covington, Va., forces C. & O. and N. & W. to cut sulfuric acid rates between Pulaski and Covington from 17 to 12c/100 lbs.

Westvaco petitions public service commission for reduction of coal shipment rates to South Charleston.

Personnel

¶ *Wells Now Heads Beetleware—Childs Now With Lederle—More Than Usual Number of New Placements—*

Arthur E. Wells is now manager of the Beetleware Division of Cyanamid, replacing R. S. Childs who resigned from that position on June 22, in order that he might devote his entire time to Lederle Laboratories division of the same company.

Mr. Wells comes to Beetleware from the development committee of Cyanamid where his work with Dr. W. S. Landis and Dr. M. C. Whitaker, the other members of the Committee, is well known. Mr. Wells was previously engaged in the developments of the plant and operations at Corpus Christi, Texas, by Southern Alkali—jointly owned by Cyanamid and Pittsburgh Plate Glass. He will remain a member of the development committee, but will devote most of his time and effort to Beetleware.

Others In New Fields

Harry A. Faber, formerly with Consolidated Water, Utica, N. Y., is now The Chlorine Institute's assistant sanitary engineer, succeeding W. M. Bingley.

Calco places W. O. Brewer in charge of entire pharmaceutical manufacturing division, and appoints Lincoln Lothrop sales manager.

Manly M. Windsor, former M. I. T. chemistry instructor, is doing development work at Harshaw Chemical's Elyria, Ohio, plant.

Joseph T. Wendelken retires after more than 12 years service as du Pont building manager.

C. O. Bartlett & Snow, Cleveland, places W. A. Meddick, former Lakewood Engineering Industrial Dept. manager, in charge of sales of mixers, air filters, etc.

Firestone Tire & Rubber promotes G. G. Balazs to chief chemist for the California company to succeed Paul Beebe who will do special research work at the Akron plant. R. E. Morris goes from Akron to the chemical department compounding section.

Alsop Engineering (mixing equipment, tanks, etc.) appoints George E. Wilcox as Pittsburgh representative with offices at 1201 Metropolitan st.

Oliver C. Ralston succeeds Dr. Everett P. Partridge as supervising chemical engineer, NonMetallic Minerals Experiment Station, U. S. Bureau of Mines, New Brunswick, N. J.

Celluloid Corp. appoints E. W. Ward as director of sales, Protectoid division. W. D. Woodruff succeeds Mr. Ward as Chicago district manager, and A. J. St. John is the new advertising manager.

A. Kenneth Graham & Associates, Jenkintown, Pa., organize as chemical engineers and consultants, offering service in plated coating, metal finishing, and rust proofing fields, as well as consulting service in several heavy chemical fields.

Through the Breyer Committee

Prominent in personnel news this month are recent placements made by the Committee on Unemployment & Relief for Chemists & Chemical Engineers. They include: Walter H. Bruckner, now with U. S. Naval Research Laboratory; Norman Clark with Continental Color, Cleveland; Dr. Charles E. Entemann, Jr., now with Ekroth Laboratories, Brooklyn; Herman Land, as chemist for Interborough Rapid Transit Co.; James McLaren with U. S. Department of Agriculture; Albert C. Reed now with Pittsburgh Testing Laboratories; and T. P. N. Tomas, chemist-bacteriologist, with Lightfoot Schultz, Hoboken.

Obituaries

¶ *Handy, Former Allied Vice-President and Prominent Syracuse Citizen, Dies—Lyter, R. & H., Drowned—Other Deaths of the Month—*

Henry Hunter Smith Handy, 79, in Syracuse on the 9th. Mr. Handy, industrial and civic leader, best known for his part in American dyestuffs development, was responsible for the merger forming Allied Chemical & Dye, this country's first large dye industry. Previously, Mr. Handy was assistant to the president of Solvay Process, and Semet-Solvay vice-president. In 1920, Mr. Handy became Allied's vice-president. He had devoted the last years of his life to travel and civic enterprises. He is survived by his widow and 2 sons.

An Advertising Executive

John A. Lyter, 28, R. & H. Chemicals advertising manager, drowned while swimming near Hockessin, Pa., on Aug. 2. Joining R. & H. following graduation from Lehigh, he became advertising and publicity assistant when du Pont took over the firm. Mr. Lyter had been advertising manager since 1934. He was unmarried.

Other deaths last month were Charles H. Furman, 62, Grasselli's night superintendent at Linden, N. J., plant, of heart failure, Aug. 2nd.

Alfred Walter Bush, joint managing director, W. J. Bush & Co., Ltd., London, Eng., 3rd.

James G. Pratt, 63, J. G. Pratt Co. president, at Mechanicsville, Ohio, 6th.

Albert Benjamin Page, 42, chemical engineer in G. E. Research Laboratories, 6th.

Leroy A. Williams, 63, Williams-Hayward Varnish vice-president, in Hartford, Conn., 10th.

William H. Ryno, 77, formerly consulting engineer for Grasselli, of heart trouble, on Aug. 10.

Thomas F. Connelly, 75, in Bradford, Pa., 10th.

R. A. Beeland, Sr., part-owner of Purity Fertilizer, 10th.

Frederick W. Lawrence, 44, Cyanamid office manager, of heart attack, on the 12th. Formerly Asiatic Petroleum office manager, Mr. Lawrence had been with Cyanamid since late in '25. He is survived by his widow and 2 sons.

Paul A. Gardner, 36, International Paper, of heart trouble, 12th.

Edward H. Patterson, 74, senior partner G. W. Patterson & Co., and 1st president of the American Gum Importers' Association, at Dunraven, N. Y., on the 13th.

Alfred M. Woodward, 74, Acme White Lead & Color secretary, at Watkins Lake, Mich., 17th.

William M. Shakespeare, 51, Anaconda Copper research dept., 19th.

Charles C. Hall, 75, in Alexandria, Ind., on the 20th. Former Banner Rock Products head, and credited with inventing process for manufacture of mineral wool as insulating material, Mr. Hall retired in '29 when Johns-Manville purchased the Banner-Rock firm. He is survived by 4 children and their families.

H. H. Bruen, Columbia Naval Stores vice president-treasurer, at Goose Rock Beach, Me., 20th.

Arthur L. Benkert, general sales manager, Young Aniline Works, and member of the Salesmen's Association of the American Chemical Industries, 22nd.

Henry T. Sheldon, 81, retired Sherwin-Williams sales executive, in N. Y. City, on the 28th. Mr. Sheldon was with Sherwin-Williams from 1886 till his retirement in '24.

Washington

¶ *TVA Legislation Passes — A Model Trade Conference Practice New Solvents Regulations—*

One amendment to the recently passed Muscle Shoals legislation expressly gives TVA right to cooperate with farmers or experiment stations in use of new forms of fertilizer or fertilizer practices during experimental period. TVA is instructed to keep full account of the cost of producing chemicals necessary to national defense and useful in agriculture. Conference agreement eliminated Senate proposal to direct the authority to experiment in the production and use of chemicals for killing weeds.

N. F. A.'s Practices a Model

Because of the procedure being followed by the fertilizer industry preliminary to its trade practice conference and because information as to this procedure may be of value to other industries in planning for similar conferences, the Federal Trade Commission has, with the approval of the executive secretary of the National Fertilizer Association, Inc., made public parts of the correspondence between that officer and the chairman of the Commission relative to the approaching conference. Copies are available, free, from the Commission, Washington, D. C.

Proprietary Solvents

International Revenue Bureau issues new regulations governing sale and shipment of proprietary solvents. Copies obtainable at the Washington office.

Trade Commission

¶ *Defining "Smoke Salt"—Zanol Agrees to F. T. C. Stipulation—*

Federal Trade Commission issues complaint against Carey Salt, Hutchinson, Kans., alleging inaccurate advertising of its product "Smoke Salt," meat curing compound. Allegation charges that the product is not sufficiently smoked to correspond with the consumer's understanding of the term.

American Products Co., through its subsidiary, Zanol Products Co., Cincinnati, enters into stipulations with F. T. C. to cease misleading representations of its business.

Solvents

¶ *Prices Remain Unchanged As Demand Declines In Auto and Rubber Fields—*

All efforts to bring quotations in the mid-Continent area on petroleum solvents from the different refineries more in line with one another failed last month despite intensive efforts. Psychologically it was a poor time to attempt such a move with both the automotive and rubber centers curtailing operating schedules.

Important Price Changes

ADVANCED

	Aug. 31	July 31
None.		

DECLINED

None.

DEPT. OF LABOR STATISTICS

	x June '35	May '35	June '34
Petroleum Refining:			
Employment *a*	111.0	108.3	111.4
Payrolls *a*	98.2	*z*96.8	93.1

a 1923-25=100.0; *x* Subject to revision; *z* Revised.

While nearly all tire manufacturers in Akron reduced production last month the curtailment in operating schedules probably will not extend beyond September, and the prospects are for a sharp pick-up in October.

Plants principally affected by the reduction in schedules are those supplying the automobile industry with original equipment tires. Customary seasonal lull in original equipment demand is coming earlier this year because of the revision in plans of automobile makers and the announced intention of bringing out new models in the early Fall instead of after the 1st of the year.

Under this new program it is expected that tire manufacturers supplying this market will be unusually busy starting early in October and continuing through the balance of the year. Some tire plants have cut down to 4 days per week from 5, and others will operate only 3 weeks in September. Such programs, it is anticipated, will eliminate necessity of heavy layoffs of factory workers.

Tire production and shipments in June were disappointing with the former 10% below last year, and the latter 18% below. July rubber consumption was much more favorable, having fallen less than 1% from June, and showing a gain of 12% over a year ago. In the 1st 7 months, consumption of 292,199 tons was 3,515 tons or 1.2% above similar months of '34. Restriction of crude output is working smoothly and will probably continue so for several years, provided prices are not raised too high.

Other Solvents Unchanged

As in the case of the petroleum solvents the demand for coal tar solvents and other solvents, such as butyl alcohol, butyl acetate, highly important in the lacquer field, fell off considerably in August but prices remained unchanged.

A pick-up in call for most formulas of alcohol was reported. Interest at the moment centers in the degree of success the new anti-freeze alcohol distribution plan is registering. Producers hope to stabilize the market for the first time in several years. Manufacturers generally in the chemical field are watching with considerable interest the working out of the plan. It may hold the solution to the marketing problem of other highly competitive chemicals.

Valvoline In Industrial Naphthas

Valvoline Oil begins industrial naphthas expansion program with offices at 5th & Butler Sts., Cincinnati. Bruce C. Dodd, of Bruce C. Dodd & Co., is retained as consultant.

Laramie Field Office Opened

U. S. Dept. of Interior, Bureau of Mines, reopens Laramie, Wyo., petroleum field office, following appropriations for establishment of a petroleum experiment station at the University of Wyoming.

Employment and Payrolls

Chemical employment registered a slight drop while payroll totals advanced for the month June 15 to July 15, according to Bureau of Labor statistics. Month's chemical employment is 34% above the general industrial employment average and 35% above the same figure for '34. Payroll totals in the chemical industry remain slightly higher than the average for all industries.

Heavy Chemicals

¶ August Volume Approaches July Total — Outlook For Fall Chemical Consumption Bright In the Process Industries — Few Price Changes — Cyanamid Reviewed—

Careful check among leading producers and distributors of industrial chemicals indicates that August tonnages were approximately equal to those made in July. With practically every branch of industry operating at much higher than the usual summer seasonal levels the volume of shipments has been extremely gratifying. Some slight let-down was reported in the last week, but this was attributed to the Labor Day holiday, and all indications point to an immediate resumption of the forward movement at an even more accelerated pace.. September and October promise to be busy months, and most sales executives were of the opinion that both months might easily bring record tonnages for the current year.

Textile Industry Improving

Much of this enthusiasm is based on the more promising outlook in textiles, particularly cotton finishing and dyeing. Rayon production remains at extremely high levels and producers report that November output is now practically sold out. Demand for woolens is still heavy and a very noticeable improvement is reported in the silk centers.

Fall Possibilities

Higher production schedules are being put into operation in paper, glass, leather and paint production fields, but activity in the automotive and rubber centers will in all probability be at a low point in September but with good prospects of sharp rises very early in October. August car production is estimated at 200,000 units, a decline from July but a satisfactory volume in view of the year's total to date. Steel production, too, is likely to show a slight falling off early in September but with a definite pick-up in the 2nd and 3rd weeks of the month.

Outlook for Paper

Both new paper business and operations are somewhat better than a year ago. While new books are selling in better volume than a year ago, new publications are running slightly behind. Newsprint usage continues above last year.

Relatively Few Price Changes

Price changes in the more important industrial chemicals were conspicuously few last month with the exceptions of minor downward fluctuations in the tin salts caused solely by the weaker tone in the metal market. Price of tin tumbled £3 15s. in one day in London early last month when the International Tin Committee, meeting in Paris, announced an increase in quotas of 15%. An increase of 15% would fix world tin production at 65% of standard tonnages or to put it another way an increase of 2,070 tons a month.

With present spot sales and contract shipments holding up well plus the fact that the '36 contract season is but a month away there is little likelihood of many important price changes pending the announcement of schedules for the coming year. Buyers are already scanning the horizon, particularly in alkalies, for some indication of the coming trend.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Antimony oxide	$0.12¼	$0.11

DECLINED

Acid chlorsulfonic	$0.03½	$0.04½
Sodium stannate	.32½	.35
Tin crystals	.37	.38¼
Tin tetrachloride	.25¼	.26½

DEPT. OF LABOR STATISTICS

	x June '35	May '35	June '34
Employment *a*	108.1	107.1	111.7
Payrolls *a*	98.0	97.8	96.1
	July '35	June '35	July '34
Prices *b*	84.6	86.3	78.5

DATA FOR PROCESS INDUSTRIES

	x June '35	May '35	June '34
Paper and Pulp:			
Employment *a*	109.2	109.9	106.0
Payrolls *a*	87.5	86.9	79.5
Rubber Products:			
Employment *a*	79.7	*z*81.3	85.6
Payrolls *a*	64.8	*z*66.5	66.5
Explosives:			
Employment *a*	86.5	87.3	95.7
Payrolls *a*	72.6	74.4	73.5
Soap:			
Employment *a*	99.5	98.2	99.9
Payrolls *a*	95.8	93.8	86.0
	July '35		June '35
Exports	$2,151,000		$1,897,000
Imports	1,032,000		1,426,000

a 1923-25 = 100.0; *b* 1926 = 100.0; *x* Subject to revision; *z* Revised.

Showing Results

With 3rd quarter business so far running materially ahead of the second period, Cyanamid has prospects of showing a substantial gain in earnings this year over '34, *The Wall Street Journal* estimates. Earnings for the 2,520,370 shares of capital stock in the first half equaled 59c a share against 42c a year ago, so that net for the full year of at least $1.25 a share now seems likely. This would compare with 99c in '34.

After 5 years of intensive work in building up its properties, company is beginning to show results in slowly expanding earning power. An important step in this build-up was the recently announced private financing amounting to $9,000,000 which is being used to retire the $6,548,000 funded debt and improve working capital.

A considerable part of the achievement of the last few years is not shown in the balance sheets, since it comprises consolidation of operations of various divisions into more efficient units and expenditure of around $2,500,000 on enlarging one of the most important plants, that of the Calco.

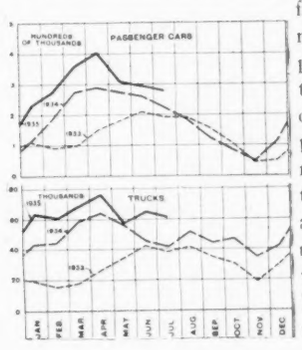
New Sulfur Source

Utah Sulfur, Inc., is organized to develop sulfur properties in Emery County, Utah. Capitalization is $200,000, or 20,000 shares at $10 par value.

Coal Tar Chemicals

¶ Intermediates In Better Demand, But Solvents Volume Is Less—Benzol Quiet—July Coke Declines—

Dye producers came into the market for intermediates in larger quantities than for some months past in anticipation of an improved demand from the textile and tanning fields this fall. Reporting the shortage of xylol, toluol, and solvent naphtha is getting to be a monotonous monthly occurrence, but no relief is in sight despite the downward trend in automotive production in August (200,000 units) and the likelihood of a still lower production figure for September. Scarcity of crude naphthalene, particularly imported, developed in the market and really constituted the most important piece of news of the August coal tar chemical markets. Benzol was quiet, the demand for creosote oil declined somewhat from the July figure, but some pick-up in the call for cresylic by the resin producers were other features reported. Movement of phenol into consuming channels was in satisfactory quantities.



—Bureau of the Census

Trend in automotive production.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Naphthalene	$1.95	$1.90

DECLINED

None.

	July '35	June '35
Imports	$1,081,000	$ 824,000
Exports	1,044,000	1,171,000

Lowest Coke Level in '35

Coke production declined again in July, to the lowest level for the current year. July rate of 84,556 tons, from byproduct and beehive coke plants, was 5.1% below that of June. It was, however, 7.2% higher than rate prevailing in July a year ago.

Output of byproduct coke for the 31 days of July amounted to 2,566,411 tons, or 82,787 tons per working day. Compared with June, July rate decreased 4.5%, decrease being shared almost equally by furnace and merchant plants. One plant ceased making coke during the month, number of active plants being reduced to 79. Production of beehive dropped sharply, from 60,500 tons in June to 46,000 tons in July. Decrease in the daily rate amounted to 26.9%.

Stocks at byproduct plants rose from 2,786,578 tons to 2,995,229 tons, or 7.5%. Increase was principally at merchant plants, where stocks advanced 11.4%; at furnace plants reserves increased only 2.1%.

Good Opens New Offices

James Good, Inc., old established Philadelphia manufacturing chemists firm and a prominent factor in the disinfectant production field, opens offices at 303 4th ave., N. Y. City, and at 1613 Harvard st., NW., Washington, in move to widen coverage and to improve still further the well-known Good outstanding service.

Customs and Tariffs

Tariff Commission has received an application from R. W. Greef & Co., for an investigation into production costs of formic and oxalic acids with a view of obtaining a reduction in the present rate of duty by Presidential proclamation, as permitted by Section 336 of the Tariff.

Uruguay raises powdered sulfur import duty to 31% plus a 21% surtax of the official customs 4 pesos per 100 gross kilos valuation. Duty was formerly 5% of this same valuation.

Spain cancels export duties on calcium tartrate, argols and wine lees but increases import duties on tartaric and citric acids and calcium citrate.

Textile and Tanning Chemicals

¶ *Shoe and Textile Industries Report Higher Operations In August—Chemical Prices Steady —Spring Colors Announced—*

July shoe production was higher in June, reversing the recent trend. Total was also higher than for July a year ago. August production is reported as having been at least equal to July and possibly somewhat better. Total for the 1st 7 months of this year is running behind '34, however. Output for July was figured at about 29,500,000 pairs, as against 26,485,379 pairs in June and 28,394,000 pairs in July of '34. For the 1st 7 months, total, including July estimate, was put at 213,263,000 pairs, as compared with 217,550,000 pairs for the January-July period of '34, a decline of almost 2%.

Cattle Slaughter Drops

July cattle slaughter was 8% below the commercial slaughter last year, and 61% smaller than that including government kill of drought cattle. It was, however, slightly above the 1919-1934 average kill. A larger reduction in slaughter supplies is coming, as cattle on feed are substantially smaller than a year ago.

Visible supplies of hides fell slightly between May and June, but still constitute a sizable volume. These supplies are going to work lower over the next 8 or 10 months, but probably not by sufficient proportions to give more than a moderate rise in hide prices.

Prophecy Fulfilled

Promise of early July of a decided betterment in activity in textiles was fulfilled in the past month. While actual production of cotton cloth did not increase noticeably, a decided improvement was reported by the finishers. Stock of gray goods is still quite large but a continuance for even a short period of the present consumer demand will correct this condition. Nevertheless, the present rate of cotton cloth production is but very slightly under the rate prevailing at this period last year.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Myrobalans R2	$15.25	$14.50
Zinc dust	.066	.064
Valonia beards	43.00	41.50

DECLINED

Sumac, grd., Italian	$50.00	$53.00

DEPT. OF LABOR STATISTICS

	x June '35	May '35	June '34
Textiles:			
Employment *a*	90.3	93.5	90.9
Payrolls *a*	70.7	75.5	66.4
Leather:			
Employment *a*	82.6	*z*86.7	87.7
Payrolls *a*	70.6	*z*72.3	72.9
Dyeing and Finishing textiles:			
Employment *a*	107.3	110.0	105.6
Payrolls *a*	78.9	86.2	72.9

a 1923-25=100.0; *x* Subject to revision; *z* Revised.

Textile Production Increases

Rayon remains a particularly bright spot with production close at the heels of present plant capacity. Already November production is reported almost entirely sold out. The price advance instituted early in August has, it appears, held in contrast to the earlier efforts this year at increasing the price. Woolen production is now at a rate of approximately 3,000,000 linear feet per week. Silk consumption has been rising rapidly in the last 2 months. It is still somewhat uncertain if there will be any improvement in the use of weighted material from the low point reached last winter. Raw silk prices are at the highest levels since the pre-NRA boom of '33 and sympathetic advances are expected in the finished material to accompany the rayon advance. If silk goes higher it is more than likely to help consumption of phosphate, silicate and tin through an increase in weighted material processed.

Sharp Rise in Silk Prices

Silk manufacturers reported late last month that synthetic and silk fabric prices have been steadily strengthening, with further advances of 2½ to 5c in prospect. A very heavy percentage of the current demand, it was reported, is on synthetics. In both the finished goods and griege goods markets, spot yardage is in scanty supply and commands a premium.

Report for July of the National Federation of Textiles (covering the last 3½ weeks of that month and based on a full week's work at the beginning of August) showed that, for the stock and commission mills combined, production during the period increased 22%, while unfilled orders at the mills were up 20%.

For stock mills alone the average weekly production was 26% higher, and unfilled orders at the mills were up 20%. For these mills total net billings increased

Dye Output and Sales in '34

Class of application	Production: Quantity, pounds	Production: Per cent. of total	Sales: Quantity, pounds	Sales: Per cent. of total	Sales: Value	Sales: Per cent. of total
Acid	11,635,651	13.35	10,481,882	12.43	$ 8,231,823	19.03
Basic	4,380,981	5.02	4,096,744	4.86	3,649,446	8.44
Direct	22,450,350	25.75	21,628,679	25.65	11,673,592	26.99
Lake and spirit-soluble	3,580,534	4.11	3,082,112	3.66	2,357,128	5.45
Mordant and chrome	4,154,390	4.77	3,397,155	4.03	1,636,925	3.78
Sulphur	13,441,952	15.42	14,215,259	16.86	3,142,387	7.27
Vats (including indigo)	26,963,234	30.93	26,846,964	31.84	11,996,370	27.74
(a) Indigo	15,818,492	18.15	16,120,738	19.12	2,887,320	6.68
(b) Other vats	11,144,742	12.78	10,726,226	12.72	9,109,050	21.06
Unclassified	570,520	.65	560,250	.67	562,944	1.30
Totals	87,177,612	100.00	84,309,045	100.00	$43,250,615	100.00

40%, of which gray goods billings, sold for converting, increased 5.5%. Billings of finished goods sold for immediate consumption increased by 97%.

Rayon Shipments Gain

Domestic rayon yarn shipments gained 12% in July, showing a more than seasonal increase, it was revealed in the August issue of *The Textile Organon*, published by Tubize Chatillon. Rate of rayon deliveries in July, based on the publication's index, stood at 426, as compared with 381 in June, and 332 in July, '34.

Stocks declined during the month, the *Organon* said, and at the end of July amounted to less than 8½ weeks' supply. For this period of the year, with the active fall season ahead, "these stocks can only be described as most reasonable in size," it was stated.

Referring to the recent defeat of the proposed processing tax on rayon, Editor Hunt of the *Organon* states: "Relief from such a tax at this time clarified the uncertainty previously existing in the market, and business therefore was free to proceed on a rational basis. To this extent then the outlook for the full business is better than it was at the beginning of July."

Record Rayon Production Likely

Production of rayon yarn for the current year will hit a new all-time record, with conservative estimates putting output at about 230,000,000 lbs., it was freely predicted in the N. Y. City market last month. This figure compares with a total of 210,330,000 last year and 208,530,000 in '33.

Several reasons were given for the increase, even though at one period this year the buying demand lagged so much as to create fears of a sharp output drop. The 2-year cycle of textile demand, with an improvement in the odd year, lower and more favorable prices and the development of new types of fabrics were among the factors which held production up. Even when demand dropped sharply mills maintained their operating schedules, and accordingly the decline in buying was not reflected in operations. Manner in which current orders are coming in indicates that the industry will wind up the season with stocks in comparatively the same position as last year.

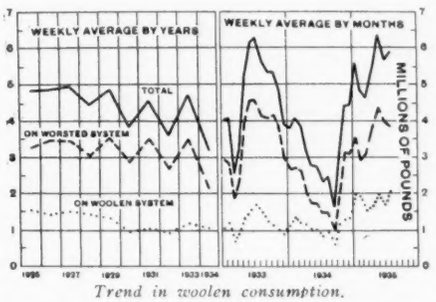
Favor Quality Silks

Promotional activities of manufacturers this year will be concentrated upon higher quality silks, according to the *N. Y. Journal of Commerce*. These silks do not suffer from competition of rayon materials, hence declines in total silk goods sales during the coming season may be less than in recent months.

Prevailing high prices for raw silk, on the other hand, arouse some concern in the trade. Since they are ascribed to the Japanese curtailment policies, sharp declines in the near future are not anticipated. Should raw quotations advance much further, however, popular and low-priced silks which currently account for the bulk of finished silk output, might have to be advanced materially. This, in turn, probably would curtail their consumption.

Woolens Are Favorable

Weekly wool consumption in July was considerably above the weekly rate for June and also substantially ahead of



Trend in woolen consumption.

weekly consumption for the 1st 7 months of the year. According to Government figures, weekly consumption in July amounted to 5,894,000 lbs., scoured basis, as against a weekly average of 5,677,000 in June and 5,449,000 weekly average for the 1st 7 months of the year. Consumption for the entire period between Jan. 1 and July 31 was 163,484,000 lbs., scoured basis.

Much Depends upon Prices

Summarizing, much depends upon satisfactory textile prices, particularly in the cotton field. With higher prices for cotton cloth, many in the trade anticipate the rate of operations to increase to 85% of single shift capacity for September. If such activity does actually occur it will be quite a jump over the 73.5% rate of July. One other factor is the labor question. Call for colors has been adversely affected by fear of strikes.

As to color shades so far there is some interest in reds and a few of the other bright colors, but the bulk of the movement is said to be for blacks, blues and browns.

Spotty Demand for Chemicals

While there was definite improvement in the call for both textile and tanning chemicals and for dyes and natural tanstuffs, buying by far and large continues in relatively small quantities with a minimum of forward purchasing. Some loosening up in this aspect of the situation may appear this month. Egg albumen prices are highly competitive as a result of the increased demand for egg yolk. Zinc dust is slightly higher again this month on the strength of a better price for the metal. Several of the natural tanstuffs are pointing higher as a result of increased prices reported in primary centers.

Showings Scheduled

All branches of the silk industry are making active plans for participation in The Silk Parade of 1935, the nation-wide Fall promotional event under the auspices of the International Silk Guild, which will be held during the week beginning Sept. 23. Paolino Gerli, president of the guild, states "Quality will be the keynote of the promotion."

Shoe Exhibit

A seasonal showing of shoes in a trade exhibit, first to be sponsored by the Shoe Fashion Guild of America, will take place at the Hotel Waldorf-Astoria in N. Y. City on Nov. 18 to 20, when members display the Spring, 1936, lines.

Spring Colors

Twenty colors for women's gloves, including 15 new shades and 5 repeated from the present season, have been chosen for Spring '36 by the glove color committee in cooperation with the Textile Color Card Association. All but 6 of these shades are also Spring shoe colors.

Ten new high fashion shades for women's shoes were selected for Spring at the recent joint meeting of tanners, shoe manufacturers and retailers held in cooperation with The Association.

Twelve colors comprise the new and repeated shades for men's shoes chosen for Spring '36 by the joint committee of tanners, shoe manufacturers and retailers in cooperation with The Association.

Wins Textile Scholarship

Dixie Mercerizing grants leave of absence to Research Chemist Sidney M. Edelstein. Mr. Edelstein has won the American Association of Textile Chemists & Colorists fellowship for mercerization research at U. of Chattanooga, 1st fellowship of its kind ever granted.

With the Textile Mills

United Piece Dye Works officers' salaries are held up by injunction from Charles M. Egan, injunction alleging "lack of aggressiveness by officers and payment of excessive salaries and bonuses to executives, which has caused a loss of $6,000,000 in the past 3 years." Salvatore M. Scasserra, Lodi, N. J., a stockholder, filed the complaint.

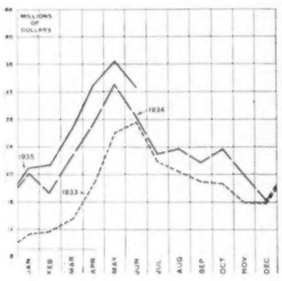
R. F. C. loans are granted to The Cretona Print & Dye Works, Clifton, N. J., and United Piece Dye Works, Lodi, N. J., for $450,000 and $3,750,000 respectively.

Union Bleachery of Greenville, S. C., and Aspinook of Jewett, Conn., will own and operate The Palmetto Prints Works, recently organized cotton printing, rayon finishing and dyeing concern. Capitalization is $500,000 with J. W. Arrington, Greenville, as board of directors chairman and P. A. Johnson as president.

Paints, Lacquers and Varnish

¶ Seasonal Lull In Demand For Raw Materials—Fall Paint Season Outlook Promising—Plans For N. P. V. and L. A. Convention—

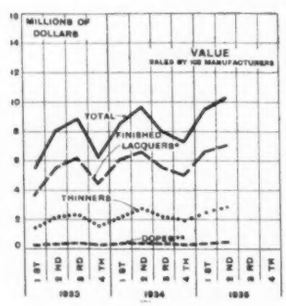
Market reporters checking the paint raw material field last month were invariably met with the term summer dullness in making their rounds. Some improvement was reported in the last few days of the month, particularly in chemical pigments. Paint manufacturers anticipate a fairly good-sized upswing in September and buying of raw materials should increase heavily in the next 2 weeks.



Trend in paint, varnish and lacquer sales.

Lead market had several "boosts" last month with the result that red lead, litharge and orange mineral quotations were again revised. Importers of orange mineral also raised prices at the same time. Casein is firmer. Demand is heavier and stocks are down from the levels of 60 days ago. Some factors report the strong possibility of further advances in the near future. A number of the varnish gum quotations are changed with the general trend downward. Dealers here are still apprehensive over the exchange situation and, accordingly, future replacement costs are pretty much of an unknown gamble. The effect of this condition is that buying is almost entirely of a hand-to-mouth variety.

While the buying trend was seasonally downward through July, although still greatly in excess of the same period of either '34 or '33, there is reason to believe that August sales were sufficiently large to change the curve upward as was the case in August of last year. July sales, reported by 579 producers, totalled $29,110,725 as against $22,942,907 in July of last year and $32,509,813 in June of the current year. Total to date for '35 (7 months) reached $199,932,243 as against but $171,261,034 for the first 7 months of '34. Sales in the various divisions of the industry for July compared with July of '34 and '33 follows:



Value of sales of lacquers, thinners and dopes by quarters.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Casein, 20-30	$0.11	$0.10½
80-100	.11½	.11
Lead, red, 95%	.0685	.0665
97%	.0710	.0690
98%	.0735	.0715
Litharge	.0585	.06¾
Orange mineral	.09¾	.09½

DECLINED

Vermillion	$1.48	$1.49

DEPT. OF LABOR STATISTICS

	x June '35	May '35	June '34
Employment *a*	112.5	112.6	106.1
Payrolls *a*	94.0	95.1	86.3
	July '35	June '35	July '34
Prices *b*	79.1	79.8	79.8
	July '35		June '35
Exports	$1,302,000		$1,580,000

a 1923-25 = 100.0; *b* 1926 = 100.0; *x* Subject to revision.

	July '35	July '34	July '33
Industrial sales (344 plants)			
Total	$ 8,281,071	$7,449,074	$6,406,184
Paint and varnish	5,887,777	5,254,492	4,493,516
Lacquer	2,393,294	2,194,582	1,912,668
Trade sales of paint, varnish and lacquer	11,309,387	8,461,401	8,627,400
Unclassified sales (235 plants)	9,520,267	7,032,432	6,845,160

Quarterly Lacquer Sales

Improvement is reported in the sale of clear lacquers, pigment lacquers, lacquer bases and dopes, and thinners for the 2nd quarter over the 1st quarter of the current year and likewise over the 2nd quarter of '34 and the 2nd quarter of '33. Total gallonage reached in the April, May and June period for 102 producers as reported by the Bureau of the Census was 8,078,745 compared with 7,291,137 for '34 and 5,935,608 for '33. Value for the 2nd quarter of the current year reached $10,255,865 which compares favorably with $9,682,257 for the same period in '34 and $8,044,749 in '33. Usual seasonal trend is downward in the 3rd and 4th quarters of the year due to the gradual decline in automotive production in the last half of the year. Betterment so far this year has likewise resulted from the greatly improved status of the automobile industry graphically shown on page 277 of this issue.

Gallonage consumption of lacquers, etc.

Sale and value of the various groups by the 102 identical manufacturers for the 2nd quarter of '35 compared with '34 follows:

	'35—2nd quarter Gals.	Value	'34—2nd quarter Gals.	Value
Finished lacquer	3,719,544	$7,034,928	3,359,790	$6,596,680
Thinners	4,019,015	2,815,750	3,644,940	2,703,520

Balance of the Year in Automobiles

With the automotive show now scheduled for November instead of January, a definite lull took place in the Detroit area as the makers prepared to bring out '36 models 2 months in advance of the traditional date. Third quarter production totalled more than 700,000 units, bringing sales figures to date to about 3,100,000 units, or more than was produced in all of '34. July registrations were 15% ahead of July, '34, and August sales were in sufficient volume to show a still larger gain of 24.54% over the corresponding period of '34 and only 10% below July of the current year. Auto sales are likely to slow up in September, but October is expected to show a gain if new models are ready.

What volume of production on current models remains to be disposed of is largely conjectural, but the fact the 3,000,000-unit mark will be reached about Oct. 1 appears further to assure the realization of the industry's officially estimated production of 3,525,000 cars and trucks for the calendar year.

Last time the industry touched the 3,500,000-mark was in '30. Final quarter of that year saw 462,000 units come off the assembly lines, despite the fact the production trend then was definitely downward. It appears more than likely that October, November and December production will exceed 500,000 units—it may reach 600,000 if re-tooling operations run through smoothly enough. Such production would insure good business for suppliers of plating chemicals.

Construction is Increasing Rapidly

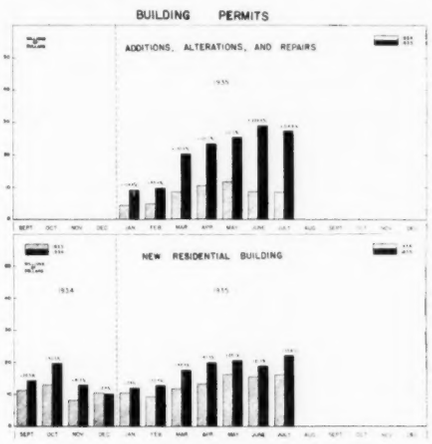
Construction total for July exceeded monthly volume reported for any other month since March, '34, when the PWA was at its peak. According to F. W. Dodge Corp., contract total for all classes of construction reported for July in 37 eastern states amounted to $159,249,900. During June volume was $148,005,200 while in July of last year total was only $119,662,300.

Chief item of significance in July is to be found in the continued activity in the residential field, as distinguished from other classes of construction. For residential building, July total amounted to $48,371,800; this was almost 2½ times volume reported for July, '34. Residential total for July slipped about 3% from the June contract volume of $49,832,600,

but that is less than is customary at this season of the year.

Home Modernization

That both the modernization of homes and business properties and the building of new residences have increased since the Modernization Credit Plan and the Mutual Mortgage Insurance Plan got under way is borne out by a graphic chart published by the F. H. A.



A graphical presentation of the growth in building operations in '35.

Based on the building permits for over 700 identical cities reported to the Bureau of Labor Statistics, this chart illustrates increase in number and value of additions, alterations and repairs of home and business structures since Sept. 1, '34. It also shows that since Jan. 1, '35, there has been a large and steady increase in the number and value of new residential buildings.

An analysis of the chart shows that starting in September, '34, number of modernization permits (additions, alterations and repairs) increased each month over the previous month until January, '35, and the value increased up to the month of December. From January, '35, number of permits increased appreciably while values had an even greater proportionate increase, continuing through the 1st 6 months of the year.

Coincident with the effective beginning of the Mutual Mortgage Insurance Plan, just previous to Jan. 1, '35, was the sharp rise in the number and value of permits issued for new residences. Even in the off-season months of January and February, gains over the previous year were respectively 66.6% and 102.3% in number of permits—in value the increase was 104.8% and 99.4%. In March they continued to rise. During April and May increase in both number and value were not quite as high as in March. In June, however, a new high point was reached—number increased 157.3% and value increased 228.9%. In July, when there is a usual falling off, number of new residence permits increased 183.4%, but the value increase 214.9% was slightly lower than June.

Trigg Sounds Convention Call

Ernest T. Trigg, National Paint, Varnish & Lacquer Association president, urges members to make prompt reservations for annual meeting to be held in the Mayflower Hotel, Washington, Oct. 30-Nov. 1st. Over 100 reservations are already in, and the total is mounting daily. Both nominating and entertainment committees have met to discuss plans.

Outstanding company names appear in Chairman Fred C. Wright's latest list of companies who will stage exhibits at the Paint Industries Show held in conjunction with the N. P. V. & L. A.'s annual convention. Show will be held Oct. 27-30 at the Mayflower in Washington. Scheduled to have exhibits are: Aluminum Co. of America, American Can, American Gum Importers Assn., American Cyanamid & Chemical, Anderson-Prichard Oil, Archer-Daniels-Midland, Arlington Machine Works, Atlantic Research Associates, Bakelite, Beck, Koller, Binney & Smith, Embosograph Corp., Falk & Co., General Electric, General Plastics, Geuder, Paeschke & Frey, Harshaw Chemical, Hercules Powder, Johns-Manville, Spencer Kellogg & Sons, Kentucky Color & Chemical, John D. Lewis, J. Meyer & Sons, Neville Co., Pure Calcium Products, Resinous Products & Chemical, R-B-H Lacquer Base, W. A. Schuyler, Sidney Smith, Stroock & Wittenberg Corp., Western Dry Color, Wheeling Corrugating, and Wilson & Bennett Mfg. Co.

Philadelphians Elect

Philadelphia Paint, Varnish & Lacquer Association's nominating committee offers following slate to be voted on Oct. 9: President, C. P. Jarden; first vice-president, Wm. H. Jarden, Jr.; 2nd vice-president, Gilbert Spruance; treasurer, F. S. Havens, and secretary, G. B. Heckel. Executive committee: S. R. Matlack, T. A. Bruder, J. H. Stutt, W. A. Gorrell and H. W. Hock.

New Paint Companies

New paint companies started last month include: Stewart Paint, Minneapolis; Richardson Paint & Varnish, 1229 State st., Erie, Pa.

Amarillo, Tex., and Scranton, Pa., welcome new paint companies. Superior Paint & Varnish will locate on Hickory st., Scranton, with offices in the Mears Bldg., while Hunsley Paint Mfg. will have a plant at 1701 W. 7th ave., Amarillo.

Well-Known in the Industry

Recently chartered, Cudner & O'Conner Co., 4335 W. Kinzie st., Chicago, with H. E. Cudner as president & treasurer and T. E. O'Conner as vice-president & secretary, will specialize in paint, varnish, lacquer, and specialty production.

Company Notes

Glidden's profits increase heavily, company reporting for the 9 months ended on July 31 a net profit of $1,813,971 after interest, depreciation, depletion, Federal taxes and other charges. This is equivalent, after dividend requirements on the 7% cumulative prior preference stock, to $2.26 a share on 650,000 no-par shares of common. It compares with a net profit of $1,258,276, or $1.41 a share, in the corresponding period of last year.

Acme Lead & Color Works, Pittsburgh, files notice of dissolution with the Secretary of State in Harrisburg.

Valentine & Co., Kearny, N. J., varnish producer, sells its plant to Co-Operative G. L. F. Holding Co., Ithaca, N. Y.

Fine Chemicals

¶ Call For Material In August At A Low Point—Mercury Slightly Competitive — Glycerine Scarce

August was decidedly an "off" month in the fine chemical field. Call for seasonal items for the summer period fell off badly while the pharmaceuticals for the winter period were still in but little demand. Producers are optimistic, however, over prospects of Fall deliveries.

Important Price Changes

ADVANCED

	Aug. 31	July 31
None.		

DECLINED

Mercury	$69.50	$71.50
Silver nitrate	.44⅝	.46

DEPT. OF LABOR STATISTICS

	July '35	June '35	July '34
Drugs and Pharmaceuticals prices *b*	74.0	74.3	73.0
	x June '35	May '35	June '34
Employment, Druggist's preparations *a*	95.8	96.8	96.9
Payrolls, Druggist's preparations *a*	92.7	93.9	90.3

a 1923-25 = 100.0; *b* 1926 = 100.0; *x* Subject to revision.

Silver Nitrate Again Lower

With most of the markets in the doldrums price movements were at a minimum. Silver nitrate worked lower. Despite huge purchases of metal by the Federal Government, the slide down the price scale continues. Mercury was rather competitive in the first few weeks, but the leading market factors stiffened quotations late in the month. There was quite a little small lot buying but no large purchases. Glycerine is scarce and prices firm. No doubt the European situation is working to the advantage of higher glycerine prices. Just what effect this will have on the anti-freeze markets remains to be seen.

TENNESSEE COPPER SULPHATE

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Crystal : Snow : Powdered

Product of: TENNESSEE COPPER COMPANY

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MANGANESE SULPHATE

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Address Inquiries to:

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U. S. Phosphoric Products Corp.
Tampa, Fla.

Tennessee Corporation
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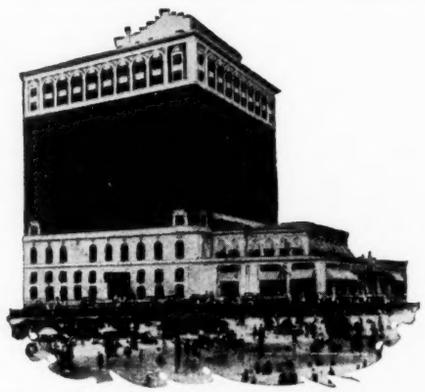
Sodium Sulphide
Tartar Emetic
Tertiary Butyl Alcohol



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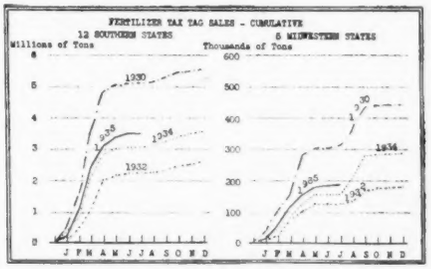
Fertilizers

¶ *Sale of Raw and Finished Materials Extremely Light — International Nitrogen Situation Muddled — Ammoniates Higher*

July fertilizer tax tag sales in 12 reporting southern states amounted to 16,772 tons, according to reports by state officials to The N. F. A. This was approximately one-third less than in July of last year and was also under July, '33. Sales



Trend in fertilizer sales.

in July are relatively unimportant, it always being the lowest month in the year. In the last 4 years July tag sales in the South accounted, on the average, for only 0.6% of the year's total.

Sales in the southern states in the 1st 7 months of this year totaled 3,459,564 tons, representing a gain of 13% over the corresponding period of '34 and 30% over the 1st 7 months of '33. Compared with the peak year of '30 there was a decline of 32.8%. Only 2 states which have reported smaller sales this year than last are Florida and Arkansas.

July sales in the 5 reporting midwestern states, amounting to 4,322 tons, were substantially above the same month of recent years. Usual seasonal movement of tag sales in the midwest results in a sharp drop in June and July, followed by a good recovery in August and September and another decline in the final quarter. In the past 4 years only 0.8% of the year's total sales were made in July. Midwestern sales in the January-July period of this year aggregated 191,563 tons, 22% more than in the corresponding period of '34 and 76% more than in the January-July period of '33. As compared with '30 there has been a decline this year of 39.8%. Each of the 5 states has shown a good increase this year over last.

Result of Hog Slaughter

Drastic decline in hog and cattle slaughter of the past 6 months or so finally caught up with the downward trend in the prices for organic ammoniates, and for the 1st time in a long period higher quotations were posted at Chicago, in N. Y. City and by the importers. If there were any real demand from the mixers in preparing Fall goods the price situation would be even firmer but actually little buying is expected. Producers of mixed goods are pretty well stocked without going into the market at this time. This condition is not only true of organic ammoniates but also quite generally so for most of the raw materials so that purchasing over the next 60 days for immediate delivery is likely to be light.

Important Price Changes

ADVANCED

	Aug. 31	July 31
Blood, dried, N. Y.	$ 2.60	$ 2.50
Chicago	2.75	2.50
Imported	2.85	2.75
Castor pomace	18.00	17.25
Nitrogenous material, imported	2.30	2.25
Superphosphate, 16%	8.50	8.25
Run-of-pile	7.75	8.00
Tankage, fert. grd., Chgo.	2.65	2.25
South American	2.75	2.45

DECLINED

None.

DEPT. OF LABOR STATISTICS

	July '35	June '35	July '34
Fert. Mat. Prices *b*	65.7	65.7	67.6
Mixed Fert. *b*	68.6	74.5	72.8
	x June '35	May '35	June '34
Employment *a*	79.2	110.1	74.4
Payrolls *a*	69.2	91.7	57.5
	July '35		June '35
Exports	$1,173,000		$ 579,000
Imports	873,000		1,406,000

a 1923-25 = 100.0; *b* 1926 = 100.0; *x* Subject to revision.

What About Nitrogen?

Just what the real situation is internationally on nitrogen is unknown. One guess is as good as another. While cables from abroad state that the European cartel has reached a 3-year agreement, the reports also indicate that the Chileans have "walked out" on the conference utterly disgusted with the quotas suggested. It is still too early, however, to count such action as final.

According to leading factors in both sulfate and potash buyers have been making strenuous efforts to break through the respective schedules but with no success. Sept. 30 is the last day that the 6% discount will be available on potash after which the flat schedule will go into effect.

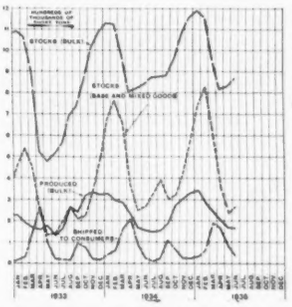
No announcement of nitrate prices beyond the end of the year has been released as yet. Fish meal and scrap quotations have taken on a much firmer appearance in the last 30 days. Effort to get through a tax on imported meals fell flat as Congress rushed through last month merely part of the "must" program and left hundreds of bills unacted upon. A pick-up in activity in phosphate mining operations is reported which would seem to indicate some improvement in superphosphate. Prices of both run-of-the-pile and 16% material were raised in the Baltimore area, some factors report, to $8 and $8.50 respectively. At the same time prices at interior southern points were off 70c a ton.

July Superphosphate Production

There was a sharp rise in superphosphate production in July, with output 30% larger than in June and 45% larger than in July, '34, according to reports by acidulators to the N. F. A. This was the 2nd consecutive month in which production was above the corresponding month of '34, following 5 months in which the trend was downward. Increase over last year was particularly marked in the Southern Area, which reported a gain of 65% as against a 34% increase in the Northern Area. As a result of the upturn in July, total output in the January-July period of this year was slightly larger than in the 1st 7 months of '34. Gain was due entirely, however, to increased production in the Northern Area, as a 9.3% decline occurred in the South.

Stocks 12% Higher

Total stocks at the end of July were 12% larger than a month earlier and 6% larger than a year earlier. Larger increase was reported by Northern acidulators, with a 14% increase during the last year. Stocks in the Southern Area showed an increase over last year of only 0.4%.



Trend in superphosphate production, shipments, stock, etc.

June Foreign Fertilizer Trade

June witnessed a sharp decline in foreign trade in fertilizers and fertilizer materials from the level which had prevailed in May. This was not particularly surprising in view of the usual seasonal decline from May to June and the large volume of exports and imports in May of this year.

Exports of fertilizers and fertilizer materials during May amounted to 63,402 tons, valued at $579,194. This was a decline of 40% in tonnage and 28% in valve from June of last year. With the exception of '32, exports in June were the lowest for that month in several years. For the 1st half of this year exports were 8% under the corresponding period of '34 in tonnage and 13% less in value. The most significant decreases in the 1st half year were in "Other nitrogenous chemicals," (chiefly domestic synthetic sodium nitrate), and land pebble rock.

June imports totaled 69,787 tons with a valuation of $1,448,087. Compared with June of last year there was an increase

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SUCROSE OCTA ACETATE

A new compound for Chemical Industry

PROPERTIES

Formula	$C_{12}H_{14}O_{11}(CH_3\text{-}CO)_8$
Melting point	70° C.
Boiling point	260° C. @ 0.1 mm.
Specific gravity	1.28
Free Acid (as Acetic)	0.10% Maximum
Mol. wt.	678.3

Sucrose Octa Acetate—SOA—is a white crystalline powder which because of its high viscosity does not recrystallize on cooling but remains as a transparent glass,

It is compatible with cellulose nitrate. cellulose acetate, and most resins and plastics. It is practically insoluble in water yet extremely soluble in most organic solvents.

These interesting properties suggest the use of SOA as an

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SOA—DENATURING GRADE—is required in Formula 23G for rubbing alcohol.

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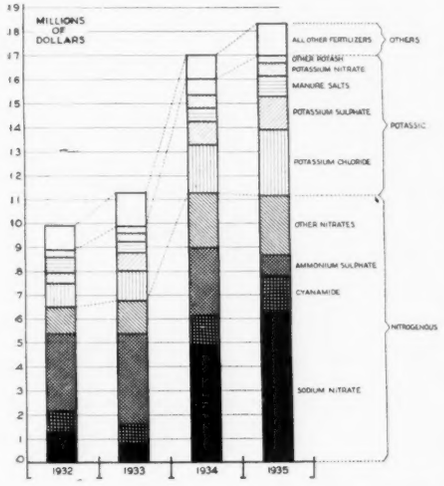
of 4.6% in tonnage and a decline of 3.5% in value. Imports in the January-June period exceeded the 1st half of last year 11% in tonnage and 8% in value. In-



Graphic picturization of U. S. fertilizer material imports for the half year.

crease over last year has been due to larger imports of potash salts, as a decrease has been registered by the nitrogenous materials group. Increase in sodium nitrate imports has been more than counter-balanced by the decline in ammonium sulfate imports.

S. C. Issues Rulings

Board of Fertilizer Control of South Carolina in July promulgated a number of rules to become effective Sept. 1. Since then the Board has considered the subject and has decided to make the time for these rules to become effective Dec. 1 instead of Sept. 1. Board feels that this will give ample time for the fertilizer companies to work off the stock they have on hand from last season. Rules which will become effective Dec. 1, are: 1. That the availability of the water insoluble ammonia shall be 85 per cent of the amount found, regardless of the percentage guaranteed; 2. that manufacturers and mixers be required to state on the tag on each bag if the fertilizer is neutral, acid-forming, or non acid-forming; 3. that where sand or any material not having a recognized agricultural value is added as a filler, the number of pounds per ton shall be stated on each bag or tag attached to each bag; 4. that manufacturers and mixers in registering brands with the Board of Fertilizer Control be required to state if any materials furnishing organic ammonia have been acid treated.

Fertilizer Personals

John W. Rutland becomes International Agricultural's manager of fertilizer materials at Atlanta, following his resignation as James K. Walsh Co. Baltimore manager. Mr. Rutland served as International's assistant sales manager in Atlanta from 1922 to '29.

Fertilizer Companies

Armour Fertilizer Works, Atlanta, buys the Redd Chemical & Nitrate Birmingham plant in order to meet constantly increasing fertilizer demands.

Nitrate of Soda & Iodine Sales Corp. of Chile announces recent reduction in Chilean nitrate sales to France. Increasing synthetic nitrogenous fertilizer production in France is cited as explanation for steadily decreasing French imports.

Motion has been filed by Davidson Chemical asking that the receivership of its subsidiary, Meadows Fertilizer, be dismissed, with receivers discharged, and the property delivered to the representatives of stockholders.

Assisted by NRA and an improvement in farm purchasing power, American Agricultural Chemical's report for the year ended June 30 showed the largest net income in 7 years and the best financial position in its history. Net profit was $1,427,603 or $6.37 a share on 224,239 shares against $977,118 or $4.19 a share on 235,206 shares in the preceding year. Cash on hand was $5,338,569, against $749,284 current liabilities, and net quick assets were equal to $55.67 a share on the capital stock.

Chemical Specialties

¶ *Where Are the Twelve Best Test Markets? — New Products Announced—*

Twelve best test markets, according to advertising agency executives, are the following: Hartford, Atlanta, Dallas, Chicago, San Francisco, Detroit, Boston, New York, Los Angeles, Philadelphia, St. Louis, and Cleveland.

Twelve best test markets, according to smallest deviations from population groups per capita retail sales averages, are: Tacoma, Utica, Fort Wayne, Houston, Tulsa, New Bedford, Chattanooga, Canton, Providence, Syracuse, Camden, and Dallas.

Products For Rayon and Salt

Fanwood Chemical, Fanwood, N. J., begins marketing campaign for "Vintex," chemical treatment to prolong rayon life, using newspapers and other media with J. P. Muller & Co., N. Y. City, as agent. Vintex will be distributed through drug chains, department stores, etc.

Ever-Dry Products announces new salt server with special Diatomite top, material capable of absorbing water to 125% of its weight, thus solving the old problem of salt shaker clogging in wet weather.

Specialty Companies

Koppers Research Laboratories, Pittsburgh, grants exclusive rights to Shulton, Inc., N. Y. City, for manufacture and sale of soaps and toilet preparations containing "Thylox", recently developed colloidal sulfur.

F. H. Perry & Co., Cincinnati adhesives producer, reports a reorganization with Dr. S. J. Berry in charge of research and production, and D. C. Wagner responsible for sales. All types of vegetable cements, linoleum cements, wallpaper pastes and food packagers' glues will be made.

Darco Sales, 60 E. 42nd st., N. Y. City, offers 50 copies of valuable cleaning, spotting, and finishing booklet, arranged by Roy Denney, National *Cleaner & Dyer* editor, as prizes for 50 best letters on "The Benefits of Using Darco in Filters".

Industrial Chemical Specialties

	July '35	June '35
Exports	$965,000	$1,021,000

Soap & Toilet Preparations

Exports	$402,000	$605,000

Lehigh Whitehall Soap takes over Best Chemical, Allentown, Pa.

Drums, Inc., General Motors Bldg., Detroit, begins production of chemicals, cleaners, etc

Gardner Manufacturing, Buffalo cleaning fluid producer, celebrates 15th anniversary.

Appoint Agencies

Blue Monday, St. Louis, maker of "Blue Monday" household cleaner, appoints The Ridgeway Co., St. Louis agency, to direct its advertising account.

West Disinfecting, Long Island City, CN disinfectant producer, appoints Al Paul Lefton Co. to handle advertising.

New Packaging Award

Channing E. Sweitzer, National Retail Dry Goods Association managing director, announces "The Special Wolf Retail Award" for most effective retail package. Award will be made by Irwin D. Wolf, Kaufmann Department Stores vice-president, at a retail packaging clinic held during the annual association convention.

Important Wax Price Changes

ADVANCED

	Aug. 31	July 31
Candelilla	$0.15½	$0.12
Carnauba, No. 1, Yellow	.49	.41½
No. 2, Yellow	.48	.41
No. 2, N. C.	.41½	.36
No. 3, Chalky	.38	.32½
No. 3, N. C.	.37½	.34
Japan	.07½	.07¼

DECLINED

None.

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Whiting
Magnesium Carbonate
Magnesium Oxide
Sodium Silico Fluoride

Oils and Fats

Trend of oils prices was mixed last month — Chinawood made spectacular gains with coconut, corn, peanut and sardine also listed in the group closing at higher levels over the 30-day period. On the other hand, linseed, palm kernel, salmon and soybean were off. New crop crude edible oils declined as new supplies are becoming available.

Important Price Changes

	Aug. 31	July 31
ADVANCED		
Chinawood	$0.159	$0.15
Coconut, Manila	.04	.03¾
Corn, crude	.09¼	.08¾
Peanut	.09	.08¾
Sardine	.33	.30
DECLINED		
Linseed	$0.0770	$0.087
Palm Kernel	.03¾	.04
Salmon	.31	.32½
Soybean	.08½	.093

IMPORTS	July '35	June '35
Animal and animal products, edible	$ 4,965,000	$ 5,764,000
Inedible	14,574,000	11,838,000
Vegetable oils and fats, edible	2,356,000	2,782,000
Vegetable products, inedible	27,005,000	20,813,000
Oil seeds	4,417,000	2,638,000
Flaxseed	2,055,000	1,690,000
Expressed oils and fats, inedible	5,323,000	5,200,000
EXPORTS		
Animal and animal products, edible	$4,181,000	$4,255,000
Animal products, inedible	2,866,000	3,018,000
Vegetable products, inedible	8,898,000	7,182,000

Naval Stores

After the naval stores market righted itself of the "jitters" that suddenly affected it in July following the sudden withdrawal of AAA support in the form of loans, sufficient domestic and foreign buying of both rosin and turpentine came in to steady prices although rosins in the middle grades lost ground and turpentine went to lower levels if Savannah quotations are compared on Aug. 30 and July 31.

	Aug. 31	July 31	Net price change
B	$3.75	$3.60	$+0.15
D	3.85	3.90	— .05
E	3.90	4.00	— .10
F	3.95	4.12½	— .17½
G	4.00	4.25	— .25
H	4.00	4.27½	— .27½
I	4.00	4.27½	— .27½
K	4.02½	4.27½	— .25½
M	4.10	4.32½	— .22½
N	4.55	4.65	— .10
WG	4.75	4.70	+ .05
WW	5.00	5.15	— .15
Y	5.00	5.20	— .20
Turpentine	.38¾	.42¾	— .04

STOCKS AUG. 31

	Turpentine	Rosin
Savannah	39,031	129,219
Jacksonville	58,176	133,181

Shellac

While primary markets were generally firm prices for processed material in the domestic market showed definite weakness and the situation might easily be described as a mild "price war." First hands in this country are turning more and more to Calcutta and away from London for the differential between the 2 has widened perceptibly in the last 2 months. However, much depends upon the quality of the Calcutta shipments to come; should they prove inferior, it may easily be advisable to return to purchasing from the heavy London stocks.

Important Gum Price Changes

	Aug. 31	July 31
ADVANCED		
Dammar Singapore chips	$0.09¼	$0.08⅞
Manila B	.11⅛	.10¾
Pontianak mixed	.13¼	.12¾
DECLINED		
Copal East India, bold black	$0.04⅛	$0.04½
Dammar Batavia D	.12⅛	.12½
AE	.12⅛	.12½
AD	.14½	.15
Elemi	.09¾	.11¾
Sandarac	.28⅛	.32⅛

Moves

Wishnick-Tumpeer moves from lower Manhattan offices to 295 Madison ave., N. Y. City, occupying the entire 40th floor. Increasing business activity and the occasion of the 15th anniversary are given as reasons for the move.

Holland Supply Co., Newark, cleaner and dyer material wholesaler, rents entire building at 125-27 N. J. R. R. ave.

C. H. Becker Paint, Columbus, Ind., moves its plant to 10th & Jackson sts.

N. Y. Revolving Portable Elevator disposes of its Jersey City plant, moving to new brick and concrete plant in North Bergen, N. J.

Pure Carbonic moves its Tulsa, Okla., warehouse from 215 N. Detroit st. to 8 N. Cheyenne st.

Republic Steel opens new sales office at 622 Dwight Bldg., Kansas City, Mo. Robert L. Pierce of the St. Louis sales office will be in charge.

Banner Mfg., Denver, soaps and sanitary supplies producer, moves from 1810 to 3551 Blake st.

Soap & Chemical, Pittsburgh, cleanser and disinfectant producer, moves to 319 Federal st. from 1419 Beaver ave.

United Sanitary Chemicals, Baltimore, is in a new 3-story building at 402 W. Lombard st.

Hockwald Chemical, San Francisco, soap, disinfectant, and insecticide producer, moves from 436 Bryant st. to 30 Bluxome st.

Sherwin-Williams moves its Nashville-Atlanta division offices from Nashville to 70 Broad st., Atlanta. Offices will include warehouse facilities. W. B. Bell remains in charge of the division.

Dixie Chemical, New Orleans, buys a 4 story building at 224 Decatur st.

O. L. West, Philadelphia manufacturer's agent (International Pulp, Zinsser, Doggett, A. Wilhelm, etc.) is now in the Drexel Bldg.

Incorporations

Watertown Chemical Co., 12 1st ave., N. W., Watertown, S. D.; chartered by William A. Malouf & Sons, Watertown, S. D.

Kent Laboratories, 7316 Central ave., Forest Park, Ill.; chartered by A. Scudder, R. E. O'Conner and John J. O'Conner.

DeRewal Bleaches, Inc., Syracuse, N. Y.; chartered by the DeRewal Foundation, Syracuse, N. Y.

Solventol Chemical Products Co., 970 East Vernor Highway, Detroit; chartered by Edwin Schulte and Charles Campbell.

Columb.a Chemical Co., Des Moines, Iowa; capitalized at 100 shares—no par value.

Alwarth Chemical Corp., Manhattan, N. Y. City; capitalized at 200 shares—no par value; chartered by Leonard R. Hanower, 58 W. 40th st., N. Y. City.

House of Warren; 215 W. Ohio st., Chicago; chartered by John J. Warren, H. W. Robbins and Frank J. Niles.

West Bauxite Mining Co., West Bauxite, Ark.; capitalized at $10,000; chartered by L. J. Harrington and C. H. McGregor, Little Rock, Ark.

Arkansas Bauxite Corp., West Bauxite, Ark.; capitalized at $30,000; chartered by L. B. Barrow and A. B. Priskett, Little Rock, Ark.

Jordan Co., 2626 Arthington st., Chicago, Ill.; capitalized at 100 shares, p. v. common; chartered by Thomas J. Finnegan, Suite 1901 American Nat. Bank Bldg., 33 N. La Salle st., Chicago, Ill.

Southern Talc Co., 808 Grant Bldg., Atlanta, Ga.; plant location; Chatsworth, Ga.; chartered by William B. Hartsfield and associates.

The Laluna Chemical Co., Buffalo, N. Y.; chartered by R. Napoli and associates, 1273 Niagara st., Buffalo, N. Y.

The Reliance Chemical Products Co., Harrison Bldg., Philadelphia; chartered by Gilbert W. Card and associates.

Sager Chemical Products Co., 11 S. La Salle st., Chicago; capitalized at 100 shares par value common; chartered by Joseph L. Pruneau, Grace Sager and Alfred B. Clark.

Dielectric Corp., Harrison, N. J.; capitalized at 2,500 shares—no par value; chartered by Edward Graff.

Superior Chemical Works, Louisville, Ky.; capitalized at $10,000; chartered by Mrs. John J. Byrne, Hazel Norton and John J. Byrne.

Shef Manufacturing Co.; Union City, N. J.; capitalized at 100 shares — no par value; chartered by Max Kleinfeld.

H. J. Wilbur Chemical Co., 928 Van Wagenen Pl., North Bergen, N. J.; chartered by H. J. Wilbur, same address.

Trudeau Mfg. Co., Calvary st., Waltham, Mass., to mfr. dyes.

General Chemical Coating, Inc., Saratoga Springs, N. Y.; capitalized at 250 shares—no par value; chartered by Albert M. Sullivan, Frank R. Quinn and Robert L. Quinn, all of Saratoga Springs.

Westboro Tanning Co., Westboro, Mass.; chartered by H. Porter Dorr, Walter E. Gilbert and Francis C. Robertson.

Appalachian Tanning Co., Asheville, N. C.; capitalized at 1,000 shares; chartered by Alvin S. Kartus and Hazel S. Glass, Asheville, N. C.

Niagara Tanners, Inc., Buffalo, N. Y.; capitalized at $100,000; chartered by Richard L. Wolf, Paul M. Hassett and Paul D. Graves, all of Buffalo.

Benduro, Inc., N. Y. City; chartered by Benjamin H. Haskell, 741 Montgomery st., Harry W. Goldberg, 1468 E. 45th st. and Fatelle Forner, 302 Empire Blvd., all Brooklyn.

Terra Cotta Properties Corp., 100 W. Monroe st., Chicago; capitalized at 1000 shares stock—no par value; chartered by Joseph H. Burkhardt and George W. K. Snyder.

Central Clay Mfg. Corp., Buffalo, N. Y.; capitalized at 200 shares stock—no par value; chartered by Edwin J. Cullivan, 928 Liberty st., and Stanley H. Montfort, 427 Huntington ave., both of Buffalo, N. Y.

Diamond Clay Products Corp., Carson City, Nev.; capitalized at $150,000.

The Trenle-Blake China Co.; Ravenswood, W. Va.; chartered by Trenle China Co., East Liverpool, Ohio.

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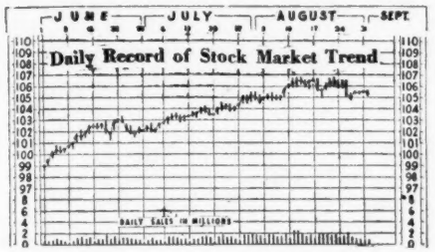
Chemical Finances

Cyanamid With Privately Borrowed Funds Is Paying Off All Funded and Bank Debts—Westvaco Calls In 5½% Debentures—DuPont Declares 35¢ Extra—Value of Chemical Stocks Again Advances in August*—

Cyanamid has made arrangements to borrow privately about $9,000,000 with which it is paying off all its funded and bank debts and those of its subsidiaries.

More than two-thirds of the loans are represented by 4% sinking-fund debentures due in '55. Balance consists of shorter term, lower interest obligations. Balance sheet of Dec. 31, 1934, showed notes payable of $1,500,000 and funded debt of $6,548,000.



—N. Y. Herald-Tribune

Company has called for redemption on Oct. 1 at par and accrued interest its 15-year 5% debenture bonds, of which there was outstanding $3,960,000 on Dec. 31 last. These would have matured in '42. Other obligations called for redemption are $1,960,000 of 6% purchase money notes due in '38 and $295,000 of Amalgamated Phosphate's 1st mortgage sinking-fund 6% bonds due next year.

On April 1 last, company called for payment $333,000 1st and refunding mortgage 7% bonds of its subsidiary, Kalbfleisch.

Extra Dividends

Du Pont directors declared a dividend for the quarter of 90c and an extra 35c on the common, both payable Sept. 14, to stockholders of record Aug. 28. Regular quarterly dividend of $1.50 on the debentures was also declared, payable Oct. 25 to stockholders of record Oct. 10.

Monroe Chemical's common is back in the paying class with 25c payable Oct. 1 to stock of record Sept. 14.

Other companies declaring extras included Eastman Kodak (25c); Chlorox, usual 12½c extra plus the 50c regular; P. & G., 25c; Chickasha Cotton Oil usual 50c special disbursement.

Westvaco's 5½'s Called

Westvaco Chlorine Products calls for payment Sept. 1, at 100% and interest, entire issue of its 5½% debentures, due Mar. 1, '37, at the Guaranty Trust in N. Y. City.

Earning Statements

V-C reports net profits of $1,277,578 for the fiscal year ended June 30, against net profits of $492,377 for the preceding year. Selling expense per ton was the lowest in the company's history. Company reduced arrears on its prior preference stock by $8 to $16.50 a share, but stated that the payment has no connection with a suit brought by stockholders to force a payment.

Inventories have been increased to $3,373,378 in proportion to an increase expected in the business. Cash holdings on June 30 were $6,525,441 and security holdings $2,013,698.

Heyden's 6 Months Net Less

Report of Heyden Chemical and its subsidiary for 6 months ended June 30, shows net income of $263,286 after depreciation, federal taxes and reserves for contingent and research expenses, equivalent after dividend requirements on 7% preferred stock, to $1.69 a share (par $10) on 149,629 shares of common stock excluding shares in treasury. This compares with $285,033 or $1.87 a share on 146,800 common shares in 1st 6 months of '34.

* Value of all stocks on the N. Y. Stock Exchange reached $39,800,738,378 on Sept. 1, a new high for '35. Average value was $30.44 as compared with $29.76 on Aug. 1. Value of chemical stocks Sept. 1 was $4,616,699,078, a gain of $147,225,041 for the month. Average price rose to $61.97, a gain of $1.97. In July gains of $168,464,041 and $2.01 respectively were reported.

Dividends and Dates

Name	Div.	Stock Record	Payable
Am. Smelt. & Rfg., 6% 2nd pf.	$6.00	Aug. 9	Sept. 2
Am. Smelt. & Rfg., 7% 1st pf.	$1.75	Aug.	Sept. 2
Archer-Daniels-Midland—Spec.	25c	Aug. 21	Sept. 1
Archer-Daniels-Midland—Q.	25c	Aug. 21	Sept. 1
Atlas Powder	50c	Aug. 30	Sept. 10
Bon Ami, Class A	$1.00	Oct. 15	Oct. 30
Bon Ami, Class B	50c	Sept. 18	Oct. 1
California Ink	50c	Sept. 21	Oct. 1
Canadian Indus., A	$1.00	Sept. 30	Oct. 31
Canadian Indus., B	$1.00	Sept. 30	Oct. 31
Canadian Indus., pf.	$1.75	Sept. 30	Oct. 15
Colgate-Palmolive-Peet	12½c	Aug. 6	Sept. 2
Colgate-Palmolive-Peet, pf.	$1.50	Sept. 5	Oct. 1
DuPont—Q.	90c	Aug. 28	Sept. 14
Du Pont—extra	35c	Aug. 28	Sept. 14
Du Pont—deb.	$1.50	Oct. 10	Oct. 25
Eastman Kodak—extra	25c	Sept. 5	Oct. 1
Eastman Kodak—Q.	$1.25	Sept. 5	Oct. 1
Eastman Kodak—pf.	$1.50	Sept. 5	Oct. 1
Freeport Texas	25c	Aug. 15	Sept. 2
Freeport Texas, pf.	$1.50	Oct. 15	Nov. 1
Hercules Powder—Q.	75c	Sept. 13	Sept. 25
Heyden Chem.	25c	Aug. 22	Sept. 3
Indus. Rayon	42c	Sept. 16	Oct. 1
International Nickel of Canada	20c	Aug. 31	Sept. 30
Johns-Manville	25c	Sept. 24	Oct. 15
Johns-Manville, pf.	$1.75	Sept. 17	Oct. 1
Leslie—Calif. Salt	35c	Aug. 31	Sept. 15
Mathieson Alk.	37½c	Sept. 9	Oct. 1
Mathieson Alk., pf.	$1.75	Sept. 9	Oct. 1
Monsanto Chem.—extra	25c	Aug. 24	Sept. 14
Monsanto Chem.—Q.	25c	Aug. 24	Sept. 14
Nat. Lead	$1.25	Sept. 13	Sept. 30
Nat. Lead, Cl. A pf.	$1.75	Aug. 30	Sept. 14
Nat. Lead, Cl. B pf.	$1.50	Oct. 18	Nov. 1
Paraffine Cos.	50c	Sept. 17	Sept. 27
Patterson-Sargent	25c	Aug. 15	Aug. 31
Penick & Ford	75c	Sept. 3	Sept. 16
P. & G.—extra	25c	Aug. 30	Sept. 25
P. & G. 5% pf.	$1.25	Aug. 23	Sept. 14
Sher. Williams, pf.	$1.50	Aug. 15	Sept. 3
Spen.-Kellogg & Sons	40c	Sept 14	Sept. 30
St. Joseph Lead	10c	Sept. 9	Sept. 20
Std. Oil of Calif.	25c	Aug. 15	Sept. 16
Std. Oil of Ind.	25c	Aug. 16	Sept. 16
Std. Oil of Ky.	25c	Aug. 30	Sept. 14
Std. Oil of Ohio, 5% pf.	$1.25	Sept. 30	Oct. 15
Sterling Prod.	95c	Aug. 15	Sept. 3
Texas Gulf	50c	Sept. 3	Sept. 16
Un. Dyewood, pf.	$1.75	Sept. 13	Oct. 1
U. S. Gypsum—extra	25c	Sept 13	Oct. 1
U. S. Gypsum—Q.	25c	Sept. 13	Oct. 1
Vanadium-Alloys Steel	25c	Aug. 20	Sept. 2
Vulcan Detinning, pf.	$1.75	Oct. 10	Oct. 19
Westvaco Chlorine	10c	Aug. 15	Sept. 2

Air Reduction Duplicates 1st Quarter

Air Reduction for quarter, subject to audit, shows net profit of $1,254,325 after depreciation, federal taxes, etc., equivalent to $1.50 a share on 835,564 no-par shares of stock, excluding 5,723 shares held in treasury. This compares with $1,254,008 or $1.50 a share on 832,365 shares in preceding quarter and $1,216,532 or $1.46 a share on 832,588 shares in June quarter of previous year.

Earnings of Carbon Black Factors

Carbon black sales for the past 6 months have been substantially better, reports by Columbian Carbon and United Carbon indicate. Columbian Carbon and subsidiaries in preliminary statement for

Price Trend of Chemical Company Stocks

	July 31	Aug. 2	Aug. 9	Aug. 16	Aug. 23	Aug. 31	Net gain or loss last month	Price on Aug. 31, 1934	1935 High	1935 Low
Air Reduction	147	145½	143	141	142¼	141½	— 5½	97	149¾	104⅜
Allied Chemical	158¾	159	159½	162½	161	161**	+ 2¼	130	165*	125
Columbian Carbon	89½	89	90⅜	91½	89	87‡	— 1½	67	94	67
Com. Solvents	20	19⅝	18¾	18⅞	19¾	19	— 1	21	23⅞	17⅝
du Pont	107¼	105½	110¼	113	116½	118	+10¾	90	122½*	86⅝
Hercules Powder	84	84¼	81¼	81½	83	83½‡‡	— ¼	.....	86*	71
Mathieson	29⅞	29⅛	30⅛	29¾	30	29½	— ⅜	28⅛	32	23¾
Monsanto	72⅞	71½	73	72⅛	74½	72	— ⅞	53	77½	55
Std. of N. J.	47	46⅝	47	47¼	46¾	45½	— 1½	44¼	50½	35¾
Texas Gulf S.	34½	34	33¾	35⅞	34¾	34¾	+ ¼	34½	36¾	28¾
Union Carbide	64⅜	63	63½	65½	65⅜	64⅝	+ ¼	.....	65⅞*	44
U. S. I.	40	38½	42¼	43½	43½	42½	+ 2½	40¼	46⅞	35⅛

* New highs in Aug.; ‡ On Aug. 28; ** On Aug. 30; ‡‡ On. Aug. 29.

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MECHLING BROS. CHEMICAL COMPANY
PHILADELPHIA CAMDEN, N.J. BOSTON, MASS.

6 months ended June 30, subject to year-end adjustments, show net income of $1,502,492 after taxes, depreciation, depletion and minority interests, equivalent to $2.79 a share on 537,681 no-par shares of common. This compares with $1,185,529 or $2.20 a share on 538,420 shares in 1st half of '34.

With sales of both carbon black and natural gas substantially higher than a year ago, United Carbon for the 1st 6 months had a record profit for such period, net being equal to $2.36 a share, almost double the dividend of $1.20 for the half-year.

T. G. S. Earnings Increase

Texas Gulf Sulphur reports for quarter ended June 30, net income of $1,914,302 after depreciation, amortization, federal taxes, etc., equivalent to 50c a share on 3,840,000 non-par shares of capital stock, comparing with $1,540,869 or 40c a share on 3,840,000 shares in preceding quarter, and $1,923,447 or 76c a share on 2,540,000 shares in June quarter of '34.

For 6 months net income (as compiled from company's quarterly reports) was $3,455,171 after charges and taxes, equal to 90c a share on 3,840,000 shares, comparing with $3,351,225 or $1.32 a share on 2,540,000 shares in 1st 6 months of '34.

Carbide Reports 59.25c

Union Carbide reports for 2nd quarter, ending June 30, net income of $5,332,528.13, equal to 59.25c a share on 9,000,743 shares. This compares with 58.81c in the first quarter of '35 and 53.10c in the 2nd quarter of '34.

Earnings Statements Summarized

Company:	Annual dividends	Net income 1935	Net income 1934	Common share earnings 1935	Common share earnings 1934	Surplus after dividends 1935	Surplus after dividends 1934
Am. Agricultural Chemical:							
Year, June 30	$2.00	$1,427,603	$977,119	*h*$6.37	*h*$4.19	$978,044	.....
American Cyanamid:							
**June 30 quarter	*cw* .10	855,375	587,076	*c* .34	*c* .23	.....	.....
Six months, June 30	*cw* .10	1,493,680	1,066,146	*c* .59	*c* .42	.....	.....
Amer. Zinc, Lead & Smelting:							
June 30 quarter	*f*....	†73,212	88,738	....	*p*1.15	.....	.....
Six months, June 30	*f*....	†99,442	175,758	....	*p*2.28	.....	.....
Champion Coated Paper:							
Year, April 28	4.00	981,969	.....	8.85	....	327,338	.....
Clorox Chemical:							
Year, June 30	$2.00	313,113	281,685	2.75	2.48	.....	.....
Columbian Carbon:							
**June 30 quarter	4.00	715,034	627,529	1.33	1.16	*.....	.....
g Six months, June 30	4.00	1,502,492	1,185,529	2.79	2.20	*.....	*.....
Eastman Kodak:							
24 weeks, June 15	$5.00	7,048,951	6,745,676	3.05	2.91	*.....	*.....
Freeport Texas:							
Six months, June 30	1.00	550,836	864,568	*h* .64	*j*1.04	115,749	$32,737
Hazel-Atlas Glass:							
June 30 quarter	5.00	810,070	557,334	1.86	1.28	267,059	14,323
‡‡Six months, June 30	5.00	1,385,230	1,125,408	3.18	2.59	299,208	39,386
Industrial Rayon:							
**June 30 quarter	1.68	†36,089	407,035	....	.68	.....	.....
Six months, June 30	1.68	260,212	1,079,342	.43	1.80	.....	.....
Internat'l Nickel Co. of Can.:							
June 30 quarter	*w* .20	5,420,615	4,963,366	.34	.31	2,750,416	3,022,075
Six months, June 30	*w* .20	10,338,242	10,012,642	.64	.62	4,997,842	6,130,059
Int'l Paper & Power:							
g March 31 quarter	*f*....	†1,068,996	†1,218,543	....	....	.....	.....
Int'l Printing Ink:							
**June 30 quarter	1.00	280,099	277,865	*h* .75	*h* .77	.....	.....
Six months, June 30	1.00	489,666	533,948	*h*1.23	*h*1.46	210,041	.....
International Silver:							
June 30 quarter	*f*....	4,720	†40,302	*p* .08	....	.....	.....
‡‡Six months, June 30	*f*....	†336,757	16,492	....	*p* .28	.....	.....
Liquid Carbonic:							
June 30 quarter	$1.00	438,975	370,934	1.25	1.06	.....	.....
Nine months, June 30	$1.00	296,307	108,607	.84	.31	.....	.....
Molybdenum Corp. of America:							
Four months, April 30	*f*....	48,163	.....	....	....	.....	.....
New Jersey Zinc:							
June 30 quarter	2.00	1,113,324	994,304	.57	.51	131,692	12,672
Six months, June 30 (correction)	2.00	2,174,213	2,086,511	1.11	1.06	210,949	123,247
Paraffine Companies:							
Year, June 30	2.00	1,476,027	2,018,120	3.10	4.24	.....	.....
Procter & Gamble:							
June 30 quarter	1.50	3,525,858	3,230,708	.52	.47	.....	.....
Year, June 30	1.50	15,120,324	14,370,066	2.23	2.11	3,340,286	3,857,190
St. Joseph Lead:							
Six months, June 30	*w* .10	†78,398	†186,662	....	....	*d*312,736	*d*382,229
United Carbon:							
June 30 quarter	2.40	460,336	360,510	*h*1.16	*h* .90	.....	.....
Six months, June 30	2.40	937,969	670,373	*h*2.36	*h*1.67	.....	.....
United Chemicals:							
**June 30 quarter	*f*....	†13,005	†23,835	....	....	.....	.....
Six months, June 30	*f*....	†27,107	†47,937	....	....	.....	.....
U. S. Rubber:							
Six months, June 30	*f*....	658,580	26,588	....	....	.....	.....
Vanadium Corp.:							
Six months, June 30	*f*....	†270,181	†326,485	....	....	.....	.....
Vulcan Detinning:							
June 30 quarter	*w*4.00	74,062	70,897	1.45	1.35	.....	.....
‡‡Six months, June 30	*w*4.00	140,253	158,259	2.65	3.21	.....	.....

c On combined Class A and Class B shares; *d* Deficit; *f* No common dividend; *g* Report subject to audit and year-end adjustments; *h* On shares outstanding at close of respective periods; *j* On average shares; *k* Profit before federal taxes and mortization; *p* On preferred stock; *w* Last dividend declared, period not announced by company; † Net loss; § Plus extras; * Not available; ** Based on a comparison of companies report for first quarter of fiscal year and the 6 months period; ‡ Indicated quarterly earnings as shown by comparison of company's reports for first quarter of fiscal year and the 6 months period; ‡‡ Indicated earnings as compiled from company's quarterly reports.

Westvaco Profits Decline

Westvaco and subsidiaries for quarter ended June 30, shows net profit of $152,775 after depreciation, federal taxes, etc., equal after dividend requirements on 7% preferred, to 40¢ a share on 284,962 shares of common. This compares with $162,233 or 43¢ a share in preceding quarter and $152,750 or 42¢ a share in second quarter of '34.

For 6 months, indicated net profit (compiled from company's quarterly reports) was $315,008 after taxes, depreciation, etc., equal to 83¢ a common share, comparing with $313,064 or 83¢ in first half of '34.

Atlas Also Shows Lower Net

Atlas Powder and subsidiaries report for 6 months ended June 30, net profit of $479,782 after depreciation, federal taxes, etc., equivalent after dividend requirements on 6% preferred, to 93c a share on 249,968 no-par shares of common, excluding shares held by company. This compares with $677,107 or $1.70 a share on 249,978 common in 1st half of '34.

Newport's Quarter—$84,708

Newport Industries, and subsidiaries, for quarter ended June 30, subject to audit, shows net profit of $84,708 after depreciation, interest, federal taxes, etc. This compares with $67,564 in preceding quarter and $77,414 in June quarter of previous year. For 6 months ended June 30, last, net profit was $152,272 after charges and taxes, comparing with $154,992 in 1st half of '34.

Mathieson Reports 31c

Mathieson reports for the quarter net income of $297,672 after depreciation, depletion, federal taxes, etc., equivalent after dividend requirements of 7% preferred stock, to 31c on 830,698 shares of no-par common.

This compares with $350,180 or 37c a share on 830,708 common in preceding quarter and $339,797 or 37c on 795,368 shares in June quarter of previous year.

For 6 months, net income was $647,853 after charges and taxes, equal to 68c a share, comparing with $617,424 or 67c in first half of '34.

Consolidated's Quarterly Statement

Consolidated Chemical Industries reports for quarter, net profit of $117,800 after depreciation, interest, federal taxes, etc., equivalent, if applied directly to Class A stock, and giving no consideration to participating provisions of the shares, to 52c a share on 225,000 no-par shares of $1.50 cumulative participating Class A preference stock.

This compares with net profit in March quarter of $115,046, equal to 51c a share on 225,000 shares of Class A stock and $142,243 or 67c a share on 211,000 shares of Class A stock in June quarter of preceding year.

Chemical Stocks and Bonds

1935 August Last	High	Low	1934 High	Low	1933 High	Low	Sales August 1935	Sales 1935	Stocks	Par $	Shares Listed	An. Rate*	Earnings $-per share-$ 1934	1933
NEW YORK STOCK EXCHANGE							Number of shares							
141½	149¾	104⅜	113	91¼	112	47½	8,000	95,300	Air Reduction	No	841,288	$4.50	4.98	3.79
161	165	125	160¾	115⅛	152	70¾	18,200	171,500	Allied Chem. & Dye	No	2,214,099	6.00	6.83	5.50
127½	127½	122½	130	122⅛	125	115	800	16,200	7% cum. pf.	100	345,540	7.00	50.79	42.24
54½	57¾	41½	48	25¼	35	7¼	26,700	105,200	Amer. Agric. Chem.	100	315,701	2.00	6.37	*p*4.19
25½	33¼	22½	62½	20¾	89⅞	13	28,200	171,700	Amer. Com. Alcohol	20	260,716	None	3.57	4.56
49⅞	52	36	39⅛	26¼	29¼	9¾	14,700	83,700	Archer-Dan-Midland	No	541,546	1.50	.....	*p*3.82
43¼	46½	32¾	55½	35¼	39⅛	9	13,300	73,800	Atlas Powder Co.	No	234,235	2.00	2.49	.74
113	113	106¾	106¾	83	83⅛	60	630	4,900	6% cum. pfd.	100	88,781	6.00	13.54	8.38
27⅛	35⅜	19½	44⅞	17⅛	58⅞	4½	174,700	662,700	Celanese Corp. Amer.	No	987,800	None	1.25	3.32
18	19⅛	15⅛	18⅛	9⅜	22⅜	7	71,400	333,100	Colgate-Palm.-Peet	No	1,985,812	.75	1.16	— .57
104⅛	105½	101	102½	68½	88	49	2,100	16,500	6% pfd.	100	254,500	6.00	15.14	1.51
86	94	67	77¼	58	71½	23⅛	11,500	149,400	Columbian Carbon	No	538,154	3.40	3.93	2.17
19	23⅞	17⅝	36¾	15¾	57¼	9	192,300	972,500	Commer. Solvents	No	2,635,371	.85	.89	.88
66	78⅜	62	84½	55½	90⅝	45⅜	40,700	236,900	Corn Products	25	2,530,000	3.00	3.16	3.87
161	165	149	150½	135	145¾	117½	1,800	6,700	7% cum. pfd.	100	243,739	7.00	39.65	46.02
44	50⅜	35⅝	55¼	29	33⅜	10	6,200	18,900	Devoe & Rayn. A	No	95,000	2.00	2.36	3.82
118	122½	86⅝	103⅞	80	95⅞	32⅛	92,100	646,900	DuPont de Nemours	20	10,871,997	3.15	3.63	2.93
114¼	115	104	128½	115	117	97½	4,000	25,300	6% cum. deb.	100	1,092,699	6.00	42.73	35.58
148	152	110½	116½	79	89¾	46	14,300	161,100	Eastman Kodak	No	2,250,921	4.00	6.28	4.76
153	164	141	147	120	130	110	440	4,510	6% cum. pfd.	100	61,657	6.00	235.22	180.34
26¼	28½	17¼	50⅜	21½	49⅜	16⅛	25,800	189,500	Freeport Texas	10	784,664	2.00	1.76	3.01
120½	120½	112½	160⅛	113½	160⅛	97	130	1,730	6% conv. pfd.	100	25,000	6.00	120.08	156.73
32½	33¼	23⅜	28⅜	15⅝	20	3¾	47,200	270,600	Glidden Co.	No	603,304	.90	.....	1.54
108	109⅜	104⅞	107½	83	91½	48	1,190	6,220	Glidden, 6% pfd.	100	63,044	7.00	.....	22.60
107	117½	85	96⅞	74	85⅞	65	2,900	40,800	Hazel Atlas	25	434,409	5.00	5.21	6.22
22	25½	11	81⅝	59	68⅝	15	5,900	43,000	Hercules Powder	No	582,679	3.00	3.94	2.79
127½	128	122	125¾	111	110⅛	85	640	4,120	7% cum. pfd.	100	105,765	7.00	28.79	22.38
30½	33	23½	32	19⅜	85	24	39,500	320,400	Industrial Rayon	No	600,000	1.68	2.23	3.01
3¾	5	2⅜	6⅛	2	5⅞	⅞	34,100	99,600	Intern. Agricul.	No	436,049	None	.....	*p* .69
39⅛	42¾	26	37¼	15	23½	5	14,600	35,800	7% cum. pr. pfd.	100	100,000	None	.....	*p*4.00
29⅛	29½	22¼	29¼	21	23¼	6¾	178,400	1,268,900	Intern. Nickel	No	14,584,025	.60	1.14	.53
30	36¼	29	32	21	27¾	13¾	4,100	18,900	Intern. Salt	No	240,000	1.50	2.02	2.04
34	36¼	32	33⅛	15¾	22	7½	3,900	34,100	Kellogg (Spencer)	No	500,000	1.60	.....	*v*3.01
34⅞	38¼	21½	43⅞	22½	37⅜	4⅜	78,400	536,300	Libbey Owens Ford	No	2,559,042	1.20	1.25	1.64
31	34⅞	24½	35⅜	16⅛	50	10¼	27,200	137,900	Liquid Carbonic	No	342,406	1.25	.....	*v*1.05
29½	32	23¾	40¾	23½	46⅝	14	28,200	189,800	Mathieson Alkali	No	650,436	1.50	1.20	1.70
72	77½	55	61⅝	39	83	25	21,600	121,900	Monsanto Chem.	10	864,000	1.25	3.03	2.57
181	185	145	170	135	140	43¼	1,500	13,600	National Lead	100	309,831	5.00	8.38	6.98
175	175¼	145	146½	122	128¼	101	400	3,440	7% cum. "A" pfd	100	243,676	7.00	20.12	18.35
162	162½	150	121½	100½	109⅛	75	540	3,110	6% cum. "B" pfd.	100	103,277	6.00	35.36	30.45
6½	8	4⅜	13	5½	11¾	1⅜	13,700	74,200	Newport Industries	1	519,347	None	.31	.05
98¾	104	80	94	60	96¾	31½	16,100	106,500	Owens-Illinois Glass	25	1,200,000	4.00	5.41	4.86
51⅞	53¾	42⅜	44⅜	33⅛	47½	19⅝	21,600	249,800	Procter & Gamble	No	6,410,000	1.70	*p* 2.23	*p* 2.11
116¾	120¾	115	117	102½	110¾	97	530	4,540	5% pfd. (ser. 2-1-29)	100	171,569	5.00	*p*88.13	*p*83.69
5⅛	5½	4	6¾	3⅛	7¼	1⅜	26,700	83,700	Tenn. Corp.	5	857,896	None	.27	— .11
34¾	36¾	28¾	43¼	30	45¼	15¼	52,400	317,200	Texas Gulf Sulphur	No	2,540,000	2.00	1.81	2.93
64⅝	65⅞	44	50⅞	35⅞	51⅞	19¼	99,300	800,200	Union Carbide & Carbon	No	9,000,743	1.60	2.28	1.59
62	63½	46	50⅛	35	37¾	10¼	24,800	180,900	United Carbon	No	370,127	2.40	3.55	1.39
42½	46⅞	35⅛	64¾	32	94	13½	31,800	202,400	U. S. Indus. Alco.	No	391,033	None	4.04	3.56
17½	21¾	11¼	31¾	14	36¼	7⅝	92,000	261,800	Vanadium Corp.-Amer.	No	366,637	None	—2.29	—2.40
3⅝	4⅝	2½	5⅜	1⅞	7⅜	⅝	15,800	71,100	Virginia-Caro. Chem.	No	486,000	None	.....	*p*—2.46
23¾	27¼	17½	26	10	26½	3⅛	29,800	129,500	6% cum. part. pfd.	100	213,392	None	.....	*p* .52
100	110	85	84	59¼	63½	35⅜	1,100	7,100	7% cum. prior pfd.	100	60,000	None	.....	*p*9.06
19½	23½	16¾	27¼	14⅞	20½	5	18,900	59,300	Westvaco Chlorine	No	284,962	.40	1.55	1.08
NEW YORK CURB EXCHANGE														
24½	24⅞	15	22½	14⅜	16½	3¼	105,200	549,100	Amer. Cyanamid "B"	No	2,404,194	*m* .10	.99	.99
3	4	2	4⅛	2⅜	4½	1	1,400	10,200	British Celanese Am. R.	10	2,806,000	None	.....	.....
105	110	90	105¼	81	110	27	1,675	17,350	Celanese, 7% cum. 1st pfd.	100	144,379	7.00	16.37	32.24
109¾	109¾	97½	102	83	90	51	700	4,725	7% cum. prior pfd.	100	113,668	7.00	28.13	47.98
			19	7	26⅞	2	1,400	7,700	Celluloid Corp.	15	194,952	None	—1.67	—1.00
13½	14½	11⅝	14⅜	10½	11⅝	4⅛	100	7,200	Courtaulds' Ltd.	1 £	24,000,000	7½%	7.57%	8.98%
96	105½	80½	91	67½	78	30	6,300	55,500	Dow Chemical	No	945,000	2.00	3.32	†3.60
8	12½	6¼	10¾	4	8	½	12,400	53,100	Duval Texas Sulphur	No	500,000	None	.....	*z* .08
47¼	52½	37	40¾	19	19	8	2,300	15,100	Heyden Chem. Corp.	10	147,600	1.35	3.07	2.74
76⅝	81¾	46¾	57½	39	39⅞	13	9,500	96,700	Pittsburgh Plate Glass	25	2,141,305	1.40	2.69	1.87
107⅜	107⅝	84	90½	47¼	47	12⅞	8,000	73,360	Sherwin Williams	25	635,583	3.00	.....	*y*3.54
107	113½	106	109¾	100	99	80	1,050	3,790	6% pfd. AA. cum.	100	155,521	6.00	.....	*y*20.78
PHILADELPHIA STOCK EXCHANGE														
102⅜	105¼	76½	75	50¼	57	25¼	620	4,354	Pennsylvania Salt	50	150,000	4.00	*p*5.94	*p*5.07

1935 August Last	High	Low	1934 High	Low	1933 High	Low	Sales August 1935	Sales 1935	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE													
111	112	104½	106¾	83⅞	89	64	452,000	3,767,000	Amer. I. G. Chem. Conv. 5½'s	1949	5½	M. N.	29,929,000
17½	18¾	7⅜	17¼	5	14⅛	2⅛	394,000	1,220,000	Anglo Chilean s. f. deb. 7's	1945	7	M. N.	12,700,000
81½	88½	77⅜	88	61½	74⅞	37	80,000	488,000	By-Products Coke Corp. 1st 5½'s "A"	1945	5½	M. N.	4,932,000
96¾	99¾	91⅛	92	62	65	38½	48,000	1,256,000	Int. Agric. Corp. 1st Coll. tr. stpd. to 1942	1942	5	M. N.	5,994,100
17¼	19	7	19½	5⅛	14⅞	2½	2,493,000	6,704,000	Lautaro Nitrate conv. b's	1954	6	J. J.	31,357,000
74⅝	94	74⅝	98½	89⅞	99⅛	87	150,000	775,000	Montecatini Min & Agric. det. 7's with war.	1937	7	J. J.	7,075,045
36⅜	38	35	74½	34½	62	33¼	4,000	17,000	Ruhr Chem. 6's	1948	6	A. O.	3,156,000
100⅛	102	91½	90	65½	76	50	9,000	276,000	Tenn. Corp. deb. 6's "B"	1944	6	M. S.	3,007,900
81	94¼	66	89½	62	81	34¼	215,000	1,485,000	Vanadium Corp. conv. 5's	1941	5	A. O.	4,261,000

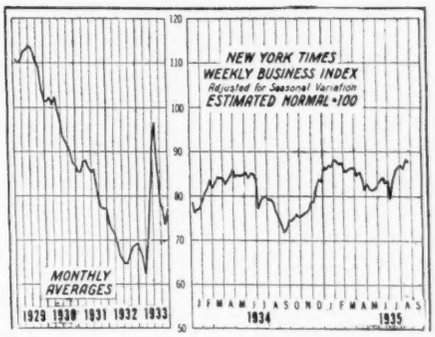
† Years ended 5-31-34 and 35; *m* Last paid, no regular rate; *p* Years ended 6-30-35 and 6-30-34; *v* Year ended 9-1-34; *y* Year ended 8-31-34; *z* Year ended 8-31-34; * Including extras.

Industrial Trends

¶ Business Activity Continues to Surge Ahead In August, and Outlook For Fall Is Highly Encouraging—

Further gains were registered in August in the current advance in general business activity although the rate of acceleration was at a somewhat slower pace than that set in the previous month. Retail trade dipped slightly from the July total, but was from 10 to 25% ahead of August of last year. Extremely hot, dry weather in most parts of the country restricted shopping. On the other hand, summer resorts and travel agencies reported the best business since '29. Wholesale buying for Fall and Winter was in surprisingly large volume—at least 10 to 15% ahead of last year. Best prospects are in the West, Mid-West and South.

Most encouraging was the further rise in the heavy industries. Steel activity showed a steady increase up to the week of Sept. 2, when the rate declined 2.1 points to 45.8%, due, mainly, to the temporary let-up in automotive production. Figure of 45.8% compares with 46% at the beginning of August and 18.4% in August of last year. Unexpected decline in the first week in September is not likely to continue, steel men agree. A long rise is confidently anticipated, with the peak expected sometime in October, although many feel that steady gains will be made through to Nov. 1, or even Jan. 1.



Contrary to seasonal trend, business continues July advance well into August

Situation in textiles is improving. Rayon plants continue close to capacity, with the 5c price increase well sustained, woolen mills are satisfactorily active, producing approximately 3,000,000 linear yards weekly, consumption of silk shows definite gains, and even cotton cloth production is now advancing.

Immediate seasonal gains are looked for in paper and glass, and in paint production. Higher hide prices and greatly increased production schedules in the shoe centers are reported.

Electrical output reached a 6-year peak last month. Even carloadings are now showing up favorably when compared with last year. Figure for the week of Aug. 31 represented the highest point reached since Nov. 12, '31. Building continues to gain, particularly in the residential field. Engineering construction awards are ahead of corresponding '34 totals. Lumber output in the last week of August reached the highest volume of the current year. Bituminous production is showing satisfactory weekly increases. While the *N. Y. Times* Index of Business Activity declined .4 of a point in the week of Aug. 24th from the high point of 88.2 reached in the week of the 17th it was still 1.4 points ahead of the rate of the week of July 27th, and 4.8 points ahead of the corresponding period of '34.

While most of the wholesale price indices show net gains for the month, many of the commodity markets were weak. This was particularly so of cotton, following the failure to hold to the 12c loan level. There then followed considerable liquidation and a net loss of $4 a bale. Several of the other grains had periodic weak spells as Government crop figures showed increases in visible supplies.

General Fall outlook is extremely promising despite the fact that the number of unemployed does not seem to go below the 10,000,000 mark despite all the schemes of the Government to correct this condition. This Fall may see this figure broken through for the first time in years. Some slight encouragement was gleaned from the rather vague promises of certain Government officials that the budget would be balanced in '39, and the enormous Federal expenditures ended. With warlike talk and gestures in Africa and Europe, there is some buying of this type here, but to date the volume has been greatly exaggerated.

Chemical shipments are satisfactory. July volume exceeded any other July total for at least 4 years and the figure for August was close to if not equal to the July total. Prices generally are firm with but one or 2 notable exceptions.

Statistics of Business

	July 1935	July 1934	June 1935	June 1934	May 1935	May 1934
Automotive production	337,049	264,933	361,320	306,477	364,727	330,455
Bldg. contracts*‡	$159,249	$119,662	$148,005	$127,131	$126,718	$134,363
Failures, Dun & Bradstreet	931	912	961	1,033	1,027	977
Merchandise imports‡	$177,698	$127,229	$156,756	$136,109	$170,559	$154,647
Merchandise exports‡	$173,371	$161,572	$170,193	$170,519	$165,457	$160,197
Newsprint Production						
Canada, tons	234,266	208,238	232,020	229,637	242,693	242,539
U. S., tons	73,108	76,184	77,339	83,504	84,323	89,726
Newfoundland, tons	.....	.....	27,559	28,571	29,658	28,148
Mexico, tons	.....	.....	1,683	1,813	846	1,666
Total, tons	.....	.....	338,601	343,525	357,520	362,079
Plate glass prod., sq. ft. ...	13,908,529	7,241,867	13,162,515	6,520,081	14,581,557	7,764,477
Steel ingots production ...	2,270,224	1,489,453	2,230,893	3,059,483	2,602,054	3,352,788
Steel activity, % capacity..	.....	.....	40.31	53.44	43.53	56.40
Pig iron production	1,520,263	1,224,826	1,552,514	1,930,133	1,727,095	2,042,896
U. S. consumption, crude rubber, tons	36,384	32,553	36,623	40,147	41,568	42,918
Tire shipments	.....	.....	.....	.....	4,067,386	5,282,995
Tire production	.....	.....	.....	.....	4,175,170	4,457,801
Tire inventory	.....	.....	.....	.....	.....	11,126,567
Dept. of Labor Indices†						
Factory payrolls, totals†..	.....	.....	66.5	64.9	68.5	67.1
Factory employment† ...	.....	.....	79.7	81.1	81.3	82.6
Chemical price index† ...	84.6	78.5	86.3	78.6	87.5	78.6
Chemical employment†*a* ..	.....	.....	108.1	111.7	107.1	106.1
Chemical payrolls†*a*	.....	.....	98.0	96.1	97.8	88.3
Chemicals and Related Products						
Exports‡	$8,372	$7,297	$7,979	$8,189	$8,573	$7,335
Imports‡	$3,638	.....	$4,575	$4,418	$7,182	$5,862
Stocks, mfd. goods†	.....	.....	.....	.....	114	117
Stocks, raw materials† ..	.....	.....	.....	.....	84	94
Cement prod., ratio of prod. to capacity	35.3	35.7	39.6	39.8	36.1	37.5
Anthracite prod., tons	3,031,987	2,973,978	4,878,738	3,495,223	4,346,863	4,491,418
Bituminous prod., tons	22,252,000	24,869,000	30,067,000	.....	26,790,000	27,385,000
Tire rim inspections	.....	.....	1,428,314	1,015,730	1,561,434	.....
Boot and shoe prod.	.....	.....	26,485,379	28,543,777	30,749,816	.....

Week Ending	Carloadings 1935	Carloadings 1934	Carloadings % of Change	Electrical Output§ 1935	Electrical Output§ 1934	Electrical Output§ % of Change	Jour. of Com. Price Index	National Fats & Oils	Fertilizer Chem. & Drugs	Fertilizer Mixed Fert.	Association Indices Fert. Mat.	Association Indices All Groups	‡‡Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher's Index Pur. Power
July 27....	596,462	610,042	—2.2	1,823,521	1,683,542	+ 8.3	79.0	68.9	94.6	71.4	62.5	77.8	78.4	45.0	86.4	121.1
Aug. 3....	597,083	612,650	—2.5	1,821,398	1,657,638	+ 9.9	79.8	69.4	95.4	71.4	64.6	78.4	78.5	46.0	86.8	120.7
Aug. 10....	583,743	603,968	—3.3	1,819,371	1,659,043	+ 9.7	80.5	71.0	95.4	71.4	64.6	78.8	78.5	48.1	86.2	120.4
Aug. 17....	615,006	601,788	+2.2	1,832,695	1,674,345	+ 9.3	80.2	73.5	95.4	71.0	64.5	78.9	78.7	48.8	88.2	119.5
Aug. 24....	626,373	606,917	+3.2	1,839,815	1,648,107	+11.6	80.0	72.8	95.4	71.0	64.6	78.5	79.3	47.9	87.8	118.3
Aug. 31....	675,000	645,780	+4.5	1,809,716	1,626,881	+11.2	79.8	73.6	95.4	71.0	64.7	78.6	....	....	....	118.7

* 37 states; † Dept. of Labor, 3 year average, 1923-1925 = 100.0; ‡ 000 omitted; § K.W.H., 000 omitted; *a* Includes all allied products but not petroleum refining; ‡‡ 1926-1928 = 100.0.

Prices Current

Heavy Chemicals, Coal-tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizers and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Import chemicals are so designated. Resale stocks when a market factor are quoted in addition to maker's prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1934 Average $1.31 - Jan. 1935 $1.23 - August 1935 $1.20

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Acetaldehyde, drs c-l, wks lb.	...	.14	...	.14	.14	.16½
Acetaldol, 95%, 50 gal drs wks lb.	.21	.25	.21	.25	.21	.31
Acetamide, tech, lcl, kegs lb.	.38	.43	.38	.43	.40	1.35
Acetanalid, tech, 150 lb bbls lb.	.24	.26	.24	.26	.24	.26
Acetic Anhydride, 100 lb cbys lb.	.21	.25	.21	.25	.21	.25
Acetin, tech, drs lb.	.22	.24	.22	.24	.22	.32
Acetone, tks, delv lb.	.11	.12	.11	.12	.10	.12
drs, c-l, delv lb.	...	.12	..	.12	.12	.12
Acetyl chloride, 100 lb cbys lb.	.55	.68	.55	.68	.55	.68
ACIDS						
Abietic, kgs, bbls lb.	.06¾	.07	.06¾	.07	.06	.07
Acetic, 28%, 400 lb bbls, c-l, wks 100 lbs.	...	2.45	2.40	2.45	2.40	2.91
glacial, bbls, c-l, wks 100 lbs.	...	8.43	8.25	8.43	8.25	10.02
glacial, USP, bbls, c-l, wks 100 lbs.	...	12.43	12.25	12.43	...	12.25
Adipic, kgs, bbls lb.	...	.72	...	.72	.72	.72
Anthranilic, refd, bbls lb.	.85	.95	.85	.95	.85	.95
tech, bbls lb.	...	.75	...	.75	.65	.75
Battery, cbys, delv 100 lbs.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb kgs lb.	.40	.45	.40	.45	.40	.45
USP, 100 lb kgs lb.	.54	.59	.54	.59	...	...
Boric, tech, gran, 80 tons, bgs, delv ton *a*	...	95.00	80.00	95.00	80.00	80.00
Broenner's, bbls lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 95%, cbys lb.	.53	.60	.53	.60	.53	.85
edible, c-l, wks, cbys lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs lb.	...	.22	...	.22	.22	.22
wks lb.	...	.23	...	.23	.23	.23
tks, wks lb.	...	.21	...	.21	.21	.21
Camphoric, drs lb.	...	5.25	...	5.25	5.25	5.25
Chicago, bbls. lb.	...	2.10	...	2.10	2.10	2.10
Chlorosulfonic, 1500 lb drs, wks lb.	.03½	.05	.03½	.05½	.04½	.05½
Chromic, 99¾%, drs, delv lb.	.13¾	.15¾	.13¾	.15¾	.13½	.15¾
Citric, USP, crys, 230 lb bbls lb. *b*	.28	.29	.28	.29	.28	.30
anhyd, gran, drs lb. *b*	...	.31	...	.31	.31	.31
Cleve's, 250 lb bbls lb.	.52	.54	.52	.54	.52	.54
Cresylic, 99%, straw, HB, drs, wks, frt equal gal.	.45	.47	.46	.48	.46	.47
99%, straw, LB, drs, wks, frt equal gal.	.64	.65	.64	.65	.64	.65
resin grade, drs, wks, frt equal gal.	.54	.55	.54	.55	.54	.55
Crotonic, drs lb.	.90	1.00	.90	1.00	.90	1.00
Formic, tech, 140 lb drs lb.	.11	.13	.11	.13	.11	.13
Fumaric, bbls lb.	...	.60	...	.60	...	...
Fuming, see Sulfuric (Oleum)						
Fuoric, tech, 90%, 100 lb. drs. lb.	...	.35	...	.35	...	.35
Gallic, tech, bbls lb.	.65	.68	.65	.68	.60	.70
USP, bbls lb.	.70	.80	.70	.80	.74	.80
Gamma, 225 lb bbls, wks lb.	.77	.79	.77	.79	.77	.79
H, 225 lb. bbls, wks lb.	.50	.55	.50	.55	.50	.70
Hydriodic, USP, 10% sol. cbys lb.	.50	.51	.50	.51	.50	.51
Hydrobromic, 48% com 155 lb cbys, wks lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, see muriatic.						
Hydrocyanic, cyl, wks lb.	.80	1.30	.80	1.30	.80	1.30
Hydrofluoric, 30%, 400 lb bbls, wks lb.	.07	.07½	.07	.07½	.07	.07½
Hydrofluosilicic, 35%, 400 bbls, wks lb.	.11	.12	.11	.12	.11	.12
Lactic, 22%, dark, 500 lb bbls lb.	.04½	.05	.04½	.05	.04	.05
22%, light refd, bbls lb.	.06½	.07	.06½	.07	.06½	.07
44%, light, 500 lb bbls lb.	.11½	.12	.11½	.12	.11½	.12
44%, dark, 500 lb bbls lb.	.09½	.10	.09½	.10	.09	.10
USP X, 95%, cbys lb.	.45	.50	.45	.50	...	...
USP VIII, 75%, cbys lb.	.43	.48	.43	.48	...	...
Laurent's, 250 lb bbls lb.	.36	.37	.36	.37	.36	.37
Linoleic, bbls lb.	.16	.16	.16	.16	.16	.16
Maleic, powd, kgs lb.	.29	.32	.29	.32	.25	.32
Malic, powd, kgs lb.	.45	.60	.45	.60	.45	.60
Metanillic, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Mixed, tks, wks N unit	.06½	.07¼	.06½	.07¼	.06½	.07¼
S unit	.008	.009	.008	.009	.008	.01
Monochloracetic, tech, bbls lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls lb.	1.50	1.60	1.50	1.60	1.50	1.60
Muriatic, 18°, 120 lb cbys, c-l, wks 100 lb.	...	1.35	...	1.35	...	1.35
tks, wks 100 lb.	...	1.00	...	1.00	...	1.00
20°, cbys, c-l, wks 100 lb.	...	1.45	...	1.45	...	1.45
tks, wks 100 lb.	...	1.20	...	1.20	...	1.20
22°, c-l, cbys, wks 100 lb.	...	1.95	...	1.95	...	1.95
tks, wks 100 lb.	...	1.60	...	1.60	...	1.60
CP, cbys lb.	.06½	.07½	.06½	.07½	.06½	.07½
N & W, 250 lb bbls lb.	.85	.87	.85	.87	.85	.87
Naphthenic, drs lb.	.12	.13	.12	.13	.10	.13
Naphthionic, tech, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys, c-l, wks 100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks 100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks 100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks 100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv lb.	.11½	.12½	.11½	.12½	.11½	.12½
Oxalic, 300 lb bbls, wks, or N. Y. lb.	.11½	.12½	.11½	.12½	.11½	.12½
Phosphoric, 50%, USP, cbys lb.	.14	.14	.14	.14	.14	.14
50%, acid, c-l, drs, wks lb.	.06	.08	.06	.08	.05	.08
75%, acid, c-l, drs, wks lb.	.09	.10½	.09	.10½	.07	.10½
Picramic, 300 lb bbls, wks lb.	.65	.70	.65	.70	.65	.70
Picric, kgs, wks lb.	.30	.40	.30	.40	.30	.50
Propionic, 98% wks, drs lb.	...	.35	...	.35	...	...
80% lb.	.15	.17½	.15	.17½	...	...
Pyrogallic, crys, kgs, wks lb.	1.55	1.65	1.55	1.65	1.40	1.65
Salicylic, tech, 125 lb bbls, wks lb.	...	.40	...	.40	.33	.40
Sebacic, tech, drs, wks lb.	...	.58	...	.58	...	.58
Succinc, bbls lb.	...	.75	...	.75	...	...
Sulfanilic, 250 lb bbls, wks lb.	.18	.19	.18	.19	.18	.19
Sulfuric, 60°, tks, wks ton	...	11.00	...	11.00	...	11.00
c-l, cbys, wks 100 lb.	...	1.10	...	1.10	...	1.10
66°, tks, wks ton	...	15.50	...	15.50	15.00	15.50
c-l, cbys, wks 100 lb.	...	1.35	...	1.35	...	1.35
CP, cbys, wks lb.	.06½	.07½	.06½	.07½	.06½	.07½
Fuming (Oleum) 20% tks, wks ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran powd, 300 lb bbls lb.	...	.24	.24	.25	.25	.26
Tobias, 250 lb bbls lb.	.75	.80	.75	.80	.75	.80
Trichloroacetic bottles lb.	2.45	2.75	2.45	2.75	2.00	2.75
kgs lb.	...	1.75	...	1.75	...	1.75
Tungstic, tech, bbls lb.	1.50	1.60	1.50	1.60	1.35	1.70
Vanadic, drs, wks lb.	1.10	1.20	1.10	1.20	1.10	1.20
Albumen, light flake, 225 lb bbls lb.	.50	.60	.45	.60	.35	.53
dark, bbls lb.	.12	.17	.12	.17	.10	.17
egg, edible lb.	...	1.05	.85	1.05	.82	.92
vegetable, edible lb.	.65	.70	.65	.70	.65	.70
ALCOHOLS						
Alcohol, Amyl, tks, delv lb.	...	.143	...	.143	...	.143
c-l, drs, delv lb.	...	.15	...	.15	.15	.157
Amyl, secondary, tks, delv lb.	...	.108	...	.108	...	.108
c-l, drs, delv lb.	...	.118	...	.118	...	.118
Amyl, tertiary, tks, delv lb.	...	.052	.052	.072	...	.052
c-l, drs, delv lb.	...	.062	.062	.082	...	.062
Benzyl, bottles lb.	.65	1.10	.65	1.10	.75	1.10
Butyl, normal, tks, delv lb. *d*	...	.12	...	.12	.09½	.12
c-l, drs, delv lb. *d*	...	.13	...	.13	.10½	.13
Butyl, secondary, tks, delv lb. *d*	...	.096	...	.096	.076	.096
c-l, drs, delv lb. *d*	...	.106	...	.106	.086	1.06
Capryl, drs, tech, wks lb.	...	.85	...	.85	.85	.85
Cinnamic, bottles lb.	3.25	3.65	3.25	3.65	3.25	3.65
Denatured, No. 5, c-l, drs, wks gal. *e*	...	.49*	.34	.49	.30	.34
Western schedule, c-l, wks gal. *e*	...	.39½	.38	.39½	...	...
Denatured, No. 1, tks, wks gal. *e*	...	.31	.29½	.31	.29½	.304
c-l, drs, wks gal. *e*	...	.36	.34½	.36	...	...
Western schedule, tks, wks gal. *e*	...	.35	.32½	.35	...	...
c-l, drs, wks gal. *e*	...	.40	.37½	.40	...	...
Diacetone, tech, tks, delv lb. *f*	...	.16	...	.16	...	...
c-l, drs, delv lb. *f*	...	.17	...	.17	...	.17

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case; * Dealers are given 20% off this price.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Alcohols (continued)						
Ethyl, 190 proof, molasses, tks ..... gal. *g*	...	4.10	4.08½	4.10	...	4.08½
c-l, drs ..... gal. *g*	4.17	4.27	4.13½	4.27	...	4.13½
c-l, bbls ..... gal. *g*	4.18	4.28	4.15½	4.28	4.12½	4.24½
absolute, drs ..... gal. *g*	4.57½	6.11½	4.55½	6.11½	...	...
Furfuryl, tech, 500 lb, drs ..... lb.	...	.35	...	.35	.35	.40
Hexyl, secondary tks, delv lb.	...	.11½	...	.11½	...	.11½
c-l, drs, delv ..... lb.	...	.12½	...	.12½	...	.12½
Normal, drs, wks .... lb.	3.25	3.50	3.25	3.50	3.25	3.50
Isoamyl, prim, cans, wks lb.	4.00	4.50	4.00	4.50	4.00	4.50
Isobutyl, refd, lcl, drs .. lb.	...	.12	.12	.60	.60	.75
c-l, drs ..... lb.	...	.11½	...	...	...	...
tks ..... lb.	...	.10½	...	...	...	...
Isopropyl, refd, c-l, drs.. lb.	...	.55	...	.55	.45	.55
Propyl, norm, 50 gal drs gal.	...	.75	...	.75	...	.75
Special Solvent, tks, wks gal.	...	.32	...	...	...	...
Western points, tks, wks ..... gal.	...	.35	...	...	...	...
Aldehyde ammonia, 100 gal drs ..... lb.	.80	.82	.80	.82	.80	.82
Alphanaphthol, crude, 300 lb bbls ..... lb.	.60	.65	.60	.65	.65	.70
Alphanaphthylamine, 350 lb bbls ..... lb.	.32	.34	.32	.34	.32	.34
Alum, ammonia, lump, c-l, bbls, wks .....100 lb.	...	3.00	...	3.00	2.90	3.00
25 bbls or more, wks .....100 lb.	...	3.15	...	3.15	...	3.15
less than 25 bbls, wks .....100 lb.	...	3.25	...	3.25	...	3.25
Granular, c-l, bbls, wks 100 lb.	...	2.75	...	2.75	...	2.75
25 bbls or more, wks 100 lb.	...	2.90	...	2.90	...	2.90
Powd, c-l, bbls, wks 100 lb.	...	3.15	...	3.15	...	3.15
25 bbls or more, wks 100 lb.	...	3.30	...	3.30	...	3.30
Chrome, bbls .....100 lb.	7.00	7.25	7.00	7.25	6.50	7.25
Potash, lump, c-l, bbls, wks .....100 lb.	...	3.25	...	3.25	...	3.25
25 bbls or more, wks 100 lb.	...	3.40	...	3.40	...	3.40
Granular, c-l, bbls, wks 100 lb.	...	3.40	...	3.00	...	3.00
25 bbls or more, bbls, wks .....100 lb.	...	3.00	...	3.15	...	3.15
Powd, c-l, bbls, wks 100 lb.	...	3.40	...	3.40	...	3.40
25 bbls or more, wks 100 lb.	...	3.55	...	3.55	...	3.55
Soda, bbls, wks .....100 lb.	4.00	4.15	4.00	4.15	3.50	4.15
Aluminum metal, c-l NY .....100 lb.	20.00	23.30	20.00	23.30	20.00	24.30
Acetate, CP, 20%, bbls lb.	.09	.10	.09	.10	.09	.10
Chloride anhyd, 99%, wks ..... lb.	.07	.12	.07	.12	.07	.12
93%, wks ..... lb.	.05	.08	.05	.08	.04	.08
Crystals, c-l, drs, wks ...lb.	.06½	.07	.06½	.07	.06½	.01
Solution, drs, wks .....lb.	.03	.03½	.03	.03½	.03	.03½
Hydrate, 96%, light, 90 lb. bbls, delv ..... lb.	.13	.15	.13	.15	.13	.16½
heavy, bbls, wks .....lb.	.04	.04½	.04	.04½	.04	.04½
Oleate, drs ..... lb.	...	.15¾	...	.15¾	...	.15¾
Palmitate, bbls .....lb.	.21	.22	.20	.22	.19	.21
Resinate, pp., bbls .....lb.	...	.15	...	.15	.12½	.15
Stearate, 100 lb bbls....lb.	.18	.20	.17	.20	.17	.18
Sulfate, com, c-l, bgs, wks .....100 lb.	...	1.35	...	1.35	1.35	1.35
c-l, bbls, wks .....100 lb.	...	1.55	...	1.55	1.55	1.55
Sulfate, iron-free, c-l, bgs, wks .....100 lb.	...	1.90	...	1.90	1.90	1.90
c-l, bbls, wks .....100 lb.	...	2.05	...	2.05	2.05	2.05
Aminoazobenzene, 110 lb kgs ..... lb.	...	1.15	...	1.15	...	1.15
Ammonia anhyd com, tks..lb.	.04½	.05½	.04½	.05½	.04½	.05½
Ammonia anhyd, 100 lb cyl lb.	.15¼	.21½	.15¼	.21½	.15¼	.21½
26°, 800 lb drs, delv ....lb.	.02½	.03	.02½	.03	.02½	.03
Aqua 26° tks NH ....cont.	...	.05	...	.05	...	.05
tk wagon ..... lb.	...	.024	...	.024	...	...
Ammonium Acetate, kgs ..lb.	.26	.33	.26	.33	.26	.33
Bicarbonate, bbls, f.o.b. plant .....100 lb.	5.15	5.71	5.15	5.71	5.15	5.71
Bifluoride, 300 lb bbls...lb.	.15	.17	.15	.17	.15	.17
carbonate, tech, 500 lb bbls ..... lb.	.08	.12	.08	.12	.08	.12
Chloride, White, 100 lb bbls, wks .....100 lb	4.45	4.90	4.45	4.90	4.45	5.25
Gray, 250 lb bbls wks ..lb.	5.00	5.75	5.00	5.75	5.00	5.75
Lump, 500 lbs cks spot lb.	.10½	.11	.10½	.11	.10	.11
Lactate, 500 lb bbls ....lb.	.15	.16	.15	.16	.15	.16
Linoleate ..... lb.	.11	.12	.11	.12	.11	.12
Nitrate, tech, cks .....lb.	.04	.05	.04	.05	.03¾	.05
Oleate, drs ..... lb.	...	.10	...	.10	...	.10
Oxalate, neut, cryst, powd, bbls ..... lb.	.26	.27	.26	.27	.26	.27
pure, cryst, bbls, kgs..lb.	.27	.28	.27	.28	.27	.28
Serchlorate, kgs .....lb.	...	.16	...	.16	.16	.16
Persulfate, 112 lb kgs ..lb.	.22½	.25	.22½	.25	.20	.25
Phosphate, dibasic tech, powd, 325 lb bbls ....lb.	.08	.10	08	.10	.08	.11½
Sulfate, dom, f.o.b., bulk. ton	22.00	24.00	20.00	24.00	22.00	25.00
200 lb bgs ..... ton	...	nom.	25.50	25.80	...	25.80
100 lb bgs ..... lb.	...	nom.	26.00	26.50	...	26.50
Sulfocyanide, kgs .....lb.	...	.50	...	.50	...	.50
Amyl Acetate (from pentane)						
tks delv ..... lb.	...	.13½	...	.13½	...	.13½
tech, drs, delv .....lb.	.142	.149	.142	.149	.142	.149
secondary, tks, delv ..lb.	...	.108	...	.108	.09	.108
c-l, drs, delv ..... lb.	.118	.123	.118	.123	...	.123
Alcohol, see Alcohol, Amyl, also Fusel Oil.						

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Amyl Chloride, norm drs, wks lb.	.56	.68	.56	.68	.56	.68
Chloride, mixed, drs, wks ..... lb.	.07	.077	.07	.077	.07	12.2
tks, wks ..... lb.	...	.06	...	.06	.06	10.5
Lactate, drs, wks .....lb.	...	.50	...	.50	...	.50
Mercaptan, drs, wks ....lb.	...	1.10	...	1.10	...	1.10
Stearate, drs, wks .....lb.	...	.31	...	.31	...	.31
Amylene, drs, wks .....lb.	.102	.11	.102	.11	.10	.11
tks, wks ..... lb.	...	.09	...	.09	...	.09
Aniline Oil, 960 lb drs and tks lb.	.15	.17½	.15	.17½	.15	.17½
Annatto fine ..... lb.	.34	.37	.34	.37	.34	.37
Anthracene, 80% .....lb.	...	.75	...	.75	...	.75
40% ..... lb.	...	.18	...	.18	...	.18
Anthraqumone, sublimed, 125 lb bbls ..... lb.	.50	.52	.50	.52	.45	.50
Antimony, metal slabs, ton lots ..... lb.	.12½	.12¾	.12½	.15	.07	.14½
Needle, powd, bbls .....lb.	.11½	.13½	.09	.13½	.07	.09
Butter of, see Chloride.						
Chloride, soln cbys .....lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls .....lb.	.12¼	.13¼	.10¼	.13¼	.08	.11
Salt, 63% to 65%, tins..lb.	.22	.24	.22	.24	.22	.24
Sulfuret, golden, bbls ...lb.	.22	.23	.19	.23	.16	.23
Vermilion, bbls .....lb.	.35	.42	.35	.42	.35	.42
Archil, conc, 600 lb bbls ..lb.	.21	.27	.21	.27	.21	.27
Double, 600 lb bbls .....lb.	.18	.20	.18	.20	.18	.20
Triple, 600 lb bbls .....lb.	.18	.20	.18	.20	.18	.20
Arglos, 80%, casks .....lb.	.15	.16	.15	.16	.15	.16
Crude, 30%, casks .....lb.	.07	.08	.07	.08	.07	.09
Aroclors, wks .....lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbl .....lb.	.08¾	.09¼	.08¾	.09¾	.08¾	.09¼
Arsenic, Red, 224 lb cs kgs lb.	...	.15¾	...	.15¾	.14	.15¾
White, 112 lb kgs .....lb.	.03½	.04½	.03½	.04½	.03½	.05
Metal ..... lb.	.40	.42	.40	.42	.40	.45
Asbestine, c-l wks .....ton	13.00	15.00	13.00	15.00	13.00	15.00
Barium Carbonate precip, 200 lb bgs, wks .....ton	56.50	61.00	56.50	61.00	56.50	61.00
Nat (witherite) 90% gr, c-l, wks, bgs .....ton	42.00	45.00	42.00	45.00	42.00	45.00
Chlorate, 112 lb kgs NY lb.	.15½	.17½	.14	.17½	.14	.16
Chloride, 600 lb bbl wks ton	72.00	74.00	72.00	74.00	72.00	74.00
Dioxide, 88%, 690 lb drs lb.	.11	.12	.11	.12	.11	.13
Hydrate, 500 lb bbls ....lb.	.05½	.06	.05½	.06	.04¾	.06
Nitrate, 700 lb cks .....lb.	...	.08¼	...	.08¼	...	.08¼
Barytes, floated, 350 lb bbls wks ..... ton	23.65	31.15	23.00	31.15	23.00	30.50
Bauxite, bulk, mines .....ton	7.00	10.00	7.00	10.00	5.00	10.00
Benzaldehyde, tech, 945 lb drs, wks ..... lb.	.60	.62	.60	.62	.60	.65
Benzene (Benzol), 90%, Ind, 8000 gal tks, frt allowed ..... gal.	...	.15	...	.15	.15	.20½
90% c-l, drs ..... gal.	...	.24	...	.24	...	.24
Ind Pure, tks, frt allowed ..... gal.	...	.15	...	.15	.15	.20½
Benzidine Base, dry, 250 lb bbls ..... lb.	.67	.69	.67	.69	.67	.69
Benzoyl Chloride, 500 lb drs lb.	.40	.45	.40	.45	.40	.45
Benzyl Chloride, tech, drs..lb.	.30	.40	.30	.40	.30	.40
Beta-Naphthol, 250 lb bbl, wks ..... lb.	...	.24	...	.24	...	.24
Naphthylamine, sublimed, 200 lb bbls .....lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls .....lb.	.53	.55	.53	.55	.53	.58
Bismuth metal	.90	1.10	.90	1.20	1.10	1.30
Chloride, boxes .....lb.	3.20	3.25	3.20	3.25	...	...
Hydroxide, boxes .....lb.	3.15	3.20	3.15	3.20	...	...
Oxychloride, boxes .....lb.	2.95	3.00	2.95	3.00	...	...
Subbenzoate, boxes .....lb.	3.25	3.30	3.25	3.30	...	...
Subcarbonate, kgs .....lb.	1.40	1.45	1.55	1.70	...	...
Trioxide, powd, boxes ..lb.	3.45	3.50	3.45	3.50	...	...
Subnitrate	1.30	1.35	1.30	1.45	1.40	1.60
Blackstrap, cane (see Molasses, Blackstrap).						
Blanc Fixe, 400 lb bbls, wks ..... ton *h*	42.50	70.00	42.50	70.00	42.50	70.00
Bleaching Powder, 800 lb drs c-l wks contract...100 lb.	...	1.90	...	1.90	...	1.90
lcl, drs, wks .....lb.	2.15	3.50	2.15	3.50	2.00	3.50
Blood, dried, f.o.b., NY..unit	2.60	2.75	2.50	3.25	2.40	3.25
Chicago, high grade ...unit	...	2.75	2.50	3.75	2.00	3.10
Imported shipt .....unit	...	2.85	2.75	3.10	2.75	3.20
Blues, Bronze Chinese Milori Prussian Soluble .....lb.	.36½	.38	.36½	.38	.35½	.38
Bone, 4½ + 50% raw, Chicago ..... ton	20.00	22.00	19.00	22.00	19.00	25.00
Bone Ash, 100 lb kgs .....lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls .....lb.	.05½	.08¼	.05½	.08¼	.05½	.08¼
Meal, 3% & 50%, imp..ton	...	23.00	22.75	24.00	16.00	24.00
Domestic, bgs, Chicago..ton	19.00	20.00	16.00	21.00	...	...
Borax, tech, gran, 80 ton lots, sacks, delv .....ton *i*	...	40.00	36.00	40.00	36.00	36.00
bbls, delv .....ton *i*	...	50.00	46.00	50.00	46.00	46.00
c-l, sacks, delv .....ton *i*	...	44.00	40.00	44.00	40.00	40.00
c-l, bbls, delv .....ton *i*	...	54.00	50.00	54.00	50.00	50.00
Tech, powd, 80 ton lots, sacks .....ton *i*	...	45.00	41.00	45.00	41.00	41.00
bbls, delv .....ton *i*	...	56.00	51.00	56.00	51.00	51.00
c-l, sacks, delv .....ton *i*	...	49.00	45.00	49.00	45.00	45.00
c-l, bbls, delv .....ton *i*	...	59.00	55.00	59.00	55.00	55.00
Bordeaux Mixture, jobbers, East, c-l, tins, drs, cases lb.	.08	.16	.08	.16	...	.16
Jobbers, West, c-l .....lb.	.08	.10	.08	.10	...	.10
Dealers, East, c-l .....lb.	.08½	.16½	.08½	.16½	...	.16½
Dealers, West, c-l .....lb.	.09	.11	.09	.11	...	.11

g Grain alcohol 20c a gal. higher in each case.

h Lowest price is for pulp, highest for high grade precipitated; *i* Crystals $6 per ton higher; USP, $15 higher in each case.

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Chromium Fluoride

Prices

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Bromine, cases .....lb.	.30	.43	.30	.43	.30	.43
Bronze, Al, pwd, 300 lb drs lb.	.80	1.50	.80	1.50	.80	1.50
Gold, blk .....lb.	.40	.55	.40	.55	.40	.55
Butanes, com 16-32° group 3 tks .....lb.	...	.04	...	.04	.02¾	.04
Butyl, Acetate, norm drs, frt allowed .....lb.	.13	.13½	.13	.13½	.11	.14
tks, frt allowed .....lb.	.12	.13	.12	.13	.10	.13
Secondary tks, frt allowed lb.	...	.096	...	.096	.08	.096
drs, frt, allowed .....lb.	.106	.111	.106	.111	...	.111
Aldehyde, 50 gal drs wks lbs.	.19	.21	.19	.21	.19	.36
Secondary, drs .....lb.	.60	.75	.60	.75	.60	.75
Carbinol, norm drs, wks lb.	.60	.75	.60	.75	.60	.75
Lactate drs .....lb.	.22½	.23½	.22½	.23½	.22½	.29
Propionate, drs .....lb.	.18	.18½	.18	.18½	.17	.22
tks, delv .....lb.	...	.17	...	.17	...	.17
Stearate, 50 gal drs ....lb.	...	.26	...	.26	.25	.26
Tartrate, drs .....lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes...lb.	.75	.85	.75	.85	.65	.85
Cadmium Metal .....lb.	.65	.70	.55	.70	.55	.65
Calcium, Acetate, 150 lb bgs c-l, delv .....100 lb.	...	2.10	2.00	2.10	2.00	3.00
Arsenate, jobbers, East of Rocky Mts, drs .....lb.	.06	.06½	.06	.06½	...	...
dealers, drs .....lb.	.06¼	.07½	.06¼	.07½	...	...
South, jobbers, drs .....lb.	.06	.06½	.06	.06½	...	...
dealers, drs .....lb.	.06½	.06¾	.06¼	.06¾	...	...
Carbide, drs .....lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs c-l .....lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, flake, 375 lb drs c-l wks .....ton	...	19.50	...	19.50	...	19.50
Solid, 650 lb drs c-l f.o.b. wks .....ton	...	17.50	...	17.50	...	17.50
Ferrocyanide, 350 lb bbls wks .....lb.	...	.17	...	.17	...	.17
Gluconate, tech, 125 lb bbls .....lb.	...	.28	...	.28	.25	.28
Nitrate, 100 lb bgs .....ton	...	26.50	...	26.50	...	26.50
Palmitate, bbls .....lb.	.21	.22	.20	.22	.19	.20
Peroxide, 100 lb drs ....lb.	...	1.25	...	1.25	...	1.25
Phosphate, tech, 450 lb bbls .....lb.	.07½	.08	.07½	.08	.07½	.08
Resinate, precip, bbls ..lb.	.13	.14	.13	.14	.13	.14
Stearate, 100 lb bbls....lb.	.18	.20	.17	.20	.17	.19
Camphor, slabs .....lb.	.49	.50	.49	.52	.51	.59
Powder .....lb.	.49	.50	.50	.52	.51	.59
Camwood, Bk, ground bbls lb.	.16	.18	.16	.18	.16	.18
Carbon, Decolorizing, drs c-l .....lb.	.08	.15	.08	.15	.08	.15
Black, c-l, bgs, delv, price varying with zone ....lb.	.0445	.0535	.0445	.0535	.0445	.0535
lcl, bgs, delv, all zones lb.	...	.07	...	.07	.06½	.07
cartons, delv .....lb.	...	.07¾	...	.07¾	...	.07¾
cases, delv .....lb.	...	.08¼	...	.08¼	...	.08¼
Bisulfide, 500 lb drs....lb.	.05¼	.08	.05¼	.08	.05½	.08
Dioxide, Liq 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, 1400 lb drs, delv .....lb.	.05¼	.06	.05¼	.06	.05¼	.06
Casein, Standard, Dom grd lb.	.11	.12½	.09½	.15	.09¼	.13
80-100 mesh, c-l, bgs ....lb.	.11½	.13¾	.10	.16	.10	.14
Castor Pomace, 5½ NH_3, cl, bgs, wks .....ton	...	17.00	17.00	18.50	...	...
Imported, ship, bgs ....ton	...	18.00	17.25	20.00	...	...
Celluloid, Scraps, ivory cs lb.	.17	.18	.17	.18	.13	.18
Transparent, cs .....lb.	...	.20	...	.20	.16	.20
Cellulose, Acetate, 50 lb kgs .....lb.	.55	.60	.55	.60	.55	.90
Chalk, dropped, 175 lb bbls lb.	.03	.03¾	.03	.03¾	.03	.03¾
Precip, heavy, 560 lb cks lb.	.03	.04	.03	.04	.03	.04
Light, 250 lb cks .....lb.	.03	.04	.03	.04	.03	.04
Charcoal, Hardwood, lump, blk, wks .....bu.	...	.15	...	.15	.12	.18
Willow, powd, 100 lb bbl wks .....lb.	.06	.06¼	.06	.06¼	.06	.06¼
bgs, delv ... .ton	22.40	23.00	22.40	30.00	...	...
Chestnut, clarified bbls wks lb.	...	.01⅞	...	.01⅞	.01⅝	.01⅞
25% tks wks .....lb	...	.01½	...	.01½	.01¼	.01½
Pwd, 60%, 100 lb bgs, wks .....lb	..	.04⅞	...	.04⅞	...	.04⅞
China Clay, c-l, blk mines ton	...	7.00	...	7.00	7.00	9.00
Powdered, bbls .....lb.	.01	.02	.01	.02	.01	.02
Pulverized, bbls wks ...ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, blk ...ton	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine, cyls, lcl, wks contract .....lb.	.07½	.08½	.07½	.08½	.07	.08½
cyls, c-l, contract ...lb. *j*	...	.05½	...	.05½	...	.05½
Liq tk wks contract..100 lb.	...	2.00	...	2.00	1.85	2.00
Multi c-l cyls wks cont..lb.	2.15	2.40	2.15	2.40	2.00	2.40
Chloroacetophenone, tins, wks .....lb.	...	2.00	...	2.00	...	...
Chlorobenzene, Mono, 100 lb drs, lc-l, wks .....lb.	.06	.07½	.06	.07½	.06	.07½
Chloroform, tech, 1000 lb drs .....lb.	.20	.21	.20	.21	.20	.21
USP, 25 lb tins .....lb.	.30	.31	.30	.31	.30	.35
Chloropicrin; comml cyls..lb.	.85	.90	.85	.90	.85	1.25
Chrome, Green, CP .....lb.	.17	.18½	.17	.30	.20	.30
Yellow .....lb.	.14	.16	.14	.16	.15	.16
Chromium, Acetate, 8% Chrome bbls .....lb.	.05	.05¼	.05	.05¼	.05	.05¼
20° soln, 400 lb bbls .. lb.	...	.05½	...	.05½	...	.05½
Fluoride, powd, 400 lb bbl .....lb.	.27	.28	.27	.28	.27	.28

j A delivered price.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Coal tar, bbls .....bbl.	7.25	9.00	7.25	9.00	7.25	9.00
Cobalt Acetate, bbls .....lb.	...	.60	...	.60	.60	.80
Carbonate tech, bbls ....lb.	1.35	1.40	1.35	1.40	1.34	1.40
Hydrate, bbls .....lb.	1.66	1.76	1.66	1.76	1.66	1.76
Linoleate, paste, bbls ...lb.	...	.30	...	.30	.30	.40
Resinate, fused, bbls ...lb.	...	.12½	...	.12½	...	.12½
Precipitated, bbls .....lb.	...	.32	...	.32	.32	.42
Cobalt Oxide, black, bgs ..lb.	1.39	1.49	1.25	1.49	1.25	1.35
Cochineal, gray or bk bgs lb.	.34	.39	.34	.39	.33	.42
Teneriffe silver, bgs ....lb.	.35	.40	.35	.40	.34	.43
Copper, metal, electrol 100 lb.	...	8.50	8.00	9.00	7.87½	9.00
Carbonate, 400 lb bbls ..lb.	...	.08¼	...	.08¼	...	.08¼
52-54% bbls .....lb.	.14½	.16¼	.14½	.16¼	.15½	.16
Chloride, 250 lb bbls ...lb.	.17	.18	.17	.18	.17	.18
Cyanide, 100 lb drs ....lb.	.37	.38	.37	.38	.37	.40
Oleate, precip, bbls .....lb.	...	.20	...	.20	...	.20
Oxide, red, 100 lb bbls ..lb.	.15	.17	.15	.17	.12½	.17
black bbls, wks .....lb.	.14½	.15	.14	.16½	...	...
Resinate, precip, bbls ...lb.	.18	.19	.18	.19	.18	.19
Stearate, precip, bbls ...lb.	.35	.40	.35	.40	.35	.40
Sub-acetate verdigris, 400 lb bbls .....lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-l wks 100 lb.	...	3.85	...	3.85	3.75	3.85
Copperas, crys and sugar bulk c-l, wks, bgs .....ton	12.00	13.00	12.00	13.00	12.00	14.50
Corn Syrup, 42 deg, bbls .....100 lb.	...	3.63	3.49	3.63	3.04	3.59
43 deg, bbls .....100 lb.	...	3.68	3.54	3.68	3.09	3.64
Corn Sugar, tanners, bbls .....100 lbs.	...	3.56	3.46	3.66	...	...
Cotton, Soluble, wet, 100 lb bbls .....lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, USP, powd & gran, 300 lb bbls .....lb.	...	.16¾	.16¼	.17¼	.17½	.19½
Creosote, USP, 42 lb cbys lb.	.45	.47	.45	.47	.45	.47
Oil, Grade 1, tks .....gal.	.12	.13	.11½	.13	.10	.12½
Grade 2 .....gal.	.109	.12	.10½	.12	.10½	.12
Cresol, USP, drs .....lb.	.11	.11½	.11	.11½	.11	.11½
Crotonaldehyde, 98% 50 gal drs .....lb.	.32	.36	.32	.36	.26	.36
Cudbear, English .....lb.	.19	.25	.19	.25	.19	.25
Philippine, 100 lb bale ..lb.	.03¾	.04¾	.03½	.04¾	.03½	.04¾
Cyanamid, bags c-l frt allowed Ammonia unit	...	1.07½	...	1.07½	...	1.07½
Dextrin, corn, 140 lb bgs f.o.b., Chicago ...100 lb.	...	4.05	3.95	4.15	3.50	4.20
British Gum, bgs ...100 lb.	4.30	4.50	4.20	4.50	3.75	4.60
White, 140 lb bgs ..100 lb.	4.00	4.10	3.90	4.10	3.47	4.20
Potato, Yellow, 220 lb bgs .....lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.08¾
White, 220 lb bgs, lcl ...lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 bgs, lcl ....lb.	...	.08	.08	.08¾	.06¾	.08¾
Diamylamine, drs, wks ....lb.	...	1.00	...	1.00	...	1.00
Diamylene, drs, wks .....lb.	.095	.102	.095	.102	.09	.102
tks, wks .....lb.	...	.08½	...	.08½	...	.08½
Diamylether, wks, drs ....lb.	.085	.092	.085	.092	.09	.77
tks, wks .....lb.	...	.075	...	.075	...	...
Diamylphthalate, drs wks gal.	.18	.19½	.18	.20½	...	.20½
Diamyl Sulfide, drs, wks lb.	...	1.10	...	1.10	...	1.10
Dianisidine, bbls .....lb.	2.25	2.45	2.25	2.45	2.35	2.45
Dibutylphthalate, drs, wks lb.	.20	.21	.20	.23	.20½	.21
Dibutyltartrate, 50 gal drs lb.	.35	.40	.35	.40	.35	.40
Dichlorethylene, drs .....gal.	.29	...	.29	...	.29	...
Dichloroethylether, 50 gal drs, wks .....lb.	.16	.17	.16	.17	.16	.21
tks, wks .....lb.	...	.15	...	.15	...	.15
Dichloromethane, drs, wks lb.	...	.23	.15	.23	...	.15
Dichloropentanes, drs, wks lb.	.032	.040	.032	.040	.0278	.040
tks, wks .....lb.	...	.02½	...	.02½	...	.02½
Diethanolamine, tks .....lb.	...	.30	...	...	...	...
Diethylamine, 400 lb drs ..lb.	2.75	3.00	2.75	3.00	2.75	3.00
Diethyl Carbinol, drs .....lb.	.60	.75	.60	.75	.60	.75
Diethylcarbonate, com drs lb.	.31⅜	.35	.31⅜	.35	.31⅜	.35
90% grade, drs .....lb.	...	.25	...	.25	...	.25
Diethylaniline, 850 lb drs..lb.	.52	.55	.52	.55	.52	.55
Diethylorthotoluidin, drs ..lb.	.64	.67	.64	.67	.64	.67
Diethyl phthalate, 1000 lb drs .....lb.	.18½	.19	.18½	.27	.26	.27
Diethylsulfate, tech, 50 gal drs .....lb.	...	...	...	...	...	...
Diethyleneglycol, drs .....lb.	.15½	.17½	.15½	.17½	.14	.16
Mono ethyl ethers, drs..lb.	.15	.17	.15	.17	.15	.17
tks, wks .....lb.	...	.15	...	.15	...	...
Mono butyl ether, drs ..lb.	...	.26	...	.26	...	.26
Diethylene oxide, 50 gal drs wks .....lb.	.20	.24	.20	.27	.26	.27
Diglycol Oleate, bbls .....lb.	.16	.24	.16	.24	.16	.18
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis .....lb.	...	.95	...	.95	.95	1.20
Dimethylaniline, 340 lb drs lb.	.29	.30	.29	.30	.29	.30
Dimethyl Ethyl Carbinol, drs .....lb.	.60	.75	.60	.75	.60	.75
Dimethyl phthalate, drs ...lb.	.20	.21½	.20½	.24½	.24	.24½
Dimethysulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls .....lb. *k*	.17	.19½	.17	.19½	.17	.19½
Dintrochlorobenzene, 400 lb bbls .....lb.	.14	.15½	.14	.15½	.14	.15½
Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls lb.	.23	.24	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls lb.	.15½	.16½	.15½	.16½	.15½	.16½
Diphenyl .....lb.	.15	.25	.15	.25	.15	.25
Diphenylamine .....lb.	.31	.32	.31	.32	.31	.34
Diphenylguanidine, 100 lb bbl .....lb.	.36	.37	.36	.37	.36	.37

k Higher price is for purified material.

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Dip Oil
Glycerin

Prices

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Dip Oil, see Tar Acid Oil.					
Divi Divi pods, bgs shipmt. ton	36.00	40.00	36.00	40.00	35.00	40.00
Extract lb.	.05	.05½	.05	.05½	.05	.05½
Egg Yolk, 200 lb. cases lb.	...	.63	.46	.63	.40	.54
Epsom Salt, tech, 300 lb bbls c-l NY 100 lb.	1.80	2.00	1.80	2.25	2.20	2.25
USP, c-l, bbls 100 lb.	...	2.00	2.00	2.25	2.25	2.25
Ether, USP anaesthesia 55 lb drs lb.	.22	.23	.22	.23	.22	.24
(Conc) lb.	.09	.10	.09	.10	.09	.10
Ether, Isopropyl 50 gal drs lb.	.07	.08	.07	.08	.07	.08
tks, frt allowed lb.	...	.06	...	.06	...	...
Nitrous, conc, bottles lb.	.75	.77	.75	.77	.75	.77
Synthetic, wks, drs lb.	.08	.09	.08	.09	.08	.09
Ethyl Acetate, 85% Ester tks lb.	.07½	.08	.07½	.08	.07½	.08
drs lb.	.08½	.09	.08½	.09	.08½	.09
Anhydrous, tks lb.	...	.08½	...	.08½	.08½	.10
drs lb.	.09½	.10	.09½	.10	.09½	.10¼
Acetoacetate, 50 gal drs lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drs lb.	.50	.55	.50	.55	.50	.55
Chloride, 200 lb drs lb.	.22	.24	.22	.24	.22	.24
Chlorocarbonate cbys lb.	...	.30	...	.30	...	.30
Crotonate, drs lb.	1.00	1.25	1.00	1.25	1.00	1.25
Ether, Absolute, 50 gal drs lb.	.50	.52	.50	.52	.50	.52
Lactate, drs, wks lb.	.25	.29	.25	.29	.25	.33
Methyl Ketone, 50 gal drs, frt allowed lb.	.08½	.09	.08½	.09	.08½	.09
tks, frt allowed lb.	...	.07½	...	.07½	...	...
Oxalate, drs, wks lb.	.37½	.55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks lb.	.30	.30½	.30	.30½	.30	.30½
Ethylene Dibromide, 60 lb drs lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont lb.	.75	.85	.75	.85	.75	.85
Dichloride, 50 gal drs lb.	.0545	.0994	.0545	.0994	.0545	.09
Glycol, 50 gal drs, wks lb.	.17	.21	.17	.28	.26	.28
tks, wks lb.	...	.16	...	...	...	...
Mono Butyl Ether, drs, wks	.20	.21	.20	.21	.20	.21
tks, wks lb.	...	.19	...	.19	.19	.19
Mono Ethyl Ether, drs, wks	.16	.17	.16	.17	.15	.17
tks, wks lb	...	.15	...	.15	.15	.15
Mono Ethyl Ether Acetate, drs, wks	.17½	.18½	.17½	.18½	.16½	.18½
tks, wks lb.	...	.16½	...	.16½	.16½	.16½
Mono, Methyl Ether, drs wks lb.	.19	.23	.19	.23	.21	.23
tks, wks lb.	...	.18	...	...	...	...
Stearate	.18	.18	.18	.18	.18	.18
Oxide, cyl lb.	...	.75	...	.75	...	.75
Ethylidenaniline lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, blk pottery ton	...	14.50	...	14.50	...	14.50
Powd, blk, wks ton	14.00	14.50	14.00	14.50	13.50	14.50
Ferric Chloride, tech, crys, 475 lb bbls lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys lb.	.06¼	.06½	.06¼	.06½	...	...
Fish Scrap, dried, unground, wks unit *l*	...	2.25	2.25	2.90	2.25	2.60
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis unit *m*	...	2.25	2.00	2.25	2.00	2.50
Fluorspar, 98%, bgs	30.00	35.50	28.00	35.50	28.00	35.50
Formaldehyde, USP, 400 lb bbls, wks lb.	.06	.07	.06	.07	.06	.07
Fossil Flour lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines ton	6.50	15.00	6.50	15.00	6.50	15.00
Imp powd, c-l, bgs ton	23.00	30.00	23.00	30.00	23.00	30.00
Furfural (tech) drs, wks lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities lb.	.16	.18	.16	.18	.16	.18
Fustic, chips lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb boxes lb.	.20	.23	.20	.23	.20	.23
Liquid 50°, 600 lb bbls. lb.	.08½	.12	.08½	.12	.08½	.12
Solid, 50 lb boxes lb.	.16	.18	.16	.18	.16	.18
Sticks ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls lb.	.42	.43	.42	.43	.42	.43
Gall Extract lb.	.18	.20	.18	.20	.18	.20
Gambier, com 200 lb bgs lb.	...	.06	.05	.08	.04	.08
Singapore cubes, 150 lb bgs 100 lb.	.08	.09	.07⅛	.09⅛	.05	.09⅛
Gelatin, tech, 100 lb cs lb.	.50	.55	.50	.55	.45	.55
Glauber's Salt, tech, c-l wks 100 lb.	1.10	1.30	1.10	1.30	1.10	1.30
Anhydrous, see Sodium Sulfate.						
Glucose (grape sugar) dry 70-80° bgs, c-l, NY 100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb. bgs 100 lb.	...	2.33	...	2.33	...	2.33
Glue, bone, com grades, c-l bgs lb.	...	.08	...	.08	.07	.12½
Better grades, c-l, bgs lb.	.09	.09½	.09	.09½	.09½	.16
Casein, kgs lb.	.18	.22	.18	.22	.18	.22
Glycerin, CP, 550 lb drs lb.	.14	.14½	.14	.14½	.11	.14½
Dynamite, 100 lb drs lb.	.13¾	.14½	.13¾	.14¼	.10	.14¼
Saponification, drs lb.	.10¼	.11½	.10	.11½	.06¾	.10½
Soap Lye, drs lb.	.09¼	.09½	.09	.10	.06¼	.09⅛

l + 10; *m* + 50.

Current

Glyceryl Phthalate
Gum, Yacca

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Glyceryl Phthalate ..... lb.	...	.28	...	.28	...	.28
Glyceryl Stearate, bbls.... lb.	...	.18	...	.18	...	.18
Glycol Phthallate ..... lb.	...	.29	.28	.29	...	.28
Glycol Stearate ..... lb.	...	.23	.18	.23	.18	.20
Graphite, Crystalline, 500 lb bbls ..... lb.	.04	.05	.04	.05	.04	.05
Flake, 500 lb. bbls ..... lb.	.08	.16	.08	.16	.08	.16
Amorphous, bbls ..... lb.	.03	.04	.03	.04	.03	.04
GUMS						
Gum Aloes, Barbadoes .... lb.	.85	.90	.85	.90	.85	.90
Arabic, amber sorts ..... lb.	.11	.13¾	.09½	.14	.07¾	.10⅝
White sorts, No. 1, bgs ..... lb.	.21	.22	.21	.22	...	...
No. 2, bgs ..... lb.	.19	.20	.19	.21	...	...
Powd, bbls ..... lb.	.15½	.16½	.13½	.16½	...	...
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b., NY ..... lb.	.02½	.10½	.02½	.10½	.02½	.10½
Egyptian, 200 lb cases, f.o.b. NY ..... lb.	.12	.15	.12	.15	.12	.15
California, f.o.b. NY, drs ..... ton	29.00	55.00	29.00	55.00	...	...
Benzoin Sumatra, USP, 120 lb cases ..... lb.	.20	.21	.20	.28	.18½	.23
Copal Congo, 112 lb bgs, clean, opaque ..... lb.	.19½	.20	.19½	.24⅝	.24⅛	.28
Dark, amber ..... lb.	.07¼	.07¾	.07¼	.09¼	.08⅝	.10½
Light, amber ..... lb.	.12½	.13	.12	.14⅞	.14⅜	.19
Copal, East India 180 lb bgs						
Macassar pale bold .... lb.	.10	.10½	.09½	.10¾	.09⅞	.10½
Chips ..... lb.	.05½	.06	.05½	.06	...	...
Nubs ..... lb.	.08½	.09	.08½	.09	...	...
Dust ..... lb.	.04	.04½	.03¾	.04½	...	...
Singapore						
Bold ..... lb.	.15⅝	.16⅛	.15⅝	.17	.16	.17
Chips ..... lb.	.04⅜	.05⅛	.04⅜	.05⅛	...	...
Nubs ..... lb.	.10	.10½	.10	.11	...	...
Dust ..... lb.	.04	.04½	.03¾	.04½	...	...
Copal Manilla, 180-190 lb baskets, Loba A ..... lb.	.11¾	.12¼	.11¾	.12¼	.11⅜	.14½
Loba B ..... lb.	.11⅛	.12	.10¼	.12	.10¼	.13½
Loba C ..... lb.	.10⅛	.10⅝	.10⅛	.11⅜	.09¾	.12
MA sorts ..... lb.	.06	.06½	.06	.07¼	.06½	.07½
DBB ..... lb.	.08⅜	.08⅞	.08	.08⅞	.08	.09½
Dust ..... lb.	.04⅞	.05⅜	.04⅞	.05⅜	...	...
Copal Pontianak, 224 lb cases, bold genuine ..... lb.	.14⅜	.14⅞	.14⅜	.16⅝	.16⅛	.19
Mixed ..... lb.	.13¼	.14	.12⅞	.14½	...	...
Chips ..... lb.	.06⅞	.07¾	.06⅞	.07⅞	...	...
Nubs ..... lb.	.09⅝	.10⅛	.09⅝	.10¾	..	...
Split ..... lb.	.12⅜	.12⅞	.12⅜	.13⅜	...	...
Dammar Batavia, 136 lb cases						
A ..... lb.	.20⅛	.20⅝	.19	.21¼	...	...
B ..... lb.	.19⅛	.19⅝	.18	.20¼	...	...
C ..... lb.	.17	.17⅛	.16	.18¼	...	...
D ..... lb.	.12⅛	.12¾	.11¾	.13⅞	...	...
A/D ..... lb.	.14½	.15	.14	.16	...	...
A/E ..... lb.	.12⅛	.13⅛	.11¾	.13½	...	...
E ..... lb.	.06¾	.07¼	.07	.07¼	.07	.09½
F ..... lb.	.06⅜	.06⅞	.06⅜	.06⅞	.05½	.06⅝
Singapore						
No. 1 ..... lb.	.16½	.17	.15⅝	.17	.15½	.18
No. 2 ..... lb.	.12½	.13	.10⅝	.13	.09⅜	.11
No. 3 ..... lb.	.04⅞	.05⅜	.04⅜	.05⅞	.05⅛	.07
Chips ..... lb.	.09¼	.09¾	.08⅞	.09¾	.09	.10¼
Dust ..... lb.	.05	.05½	.04¾	.05¾	.05	.06
Seeds ..... lb.	.06¼	.06¾	.04¾	.07¼	.06	.07¾
Ester ..... lb.	.07⅜	.08⅜	.07¼	.08⅜	...	...
Elemi, cons ..... lb.	.09¾	.10¼	...	...	...	...
Gamboge, pipe, cases ..... lb.	.55	.56	.55	.65	.57	.65
Powdered, bbls ..... lb.	.65	.70	.65	.75	.67	.75
Ghatti, sol. bgs ..... lb.	.11	.15	.09	.15	.09	.09½
Karaya, pow bbls xxx .... lb.	.24	.25	.23	.25	.23	.25
xx ..... lb.	.16	.17	.15	.17	.15	.16
No. 1 ..... lb.	.08	.09	.08	.09	.08	.11
No. 2 ..... lb.	.07	.08	.07	.08	.07	.09
Kauri, NY, San Francisco, Brown XXX, cases .... lb.	.60	.60½	.60	.60½	...	...
BX ..... lb.	.33	.33½	.33	.33½	...	...
B1 ..... lb.	.19	.19½	.19	.19½	...	...
B2 ..... lb.	.14¼	.15	.14½	.15	...	...
B3 ..... lb.	.12	.12½	.12	.12½	...	...
Pale XXX ..... lb.	.65	.65½	.65	.65½	...	...
No. 1 ..... lb.	.40	.40½	.40	.40½	...	...
No. 2 ..... lb.	.22	.22½	.22	.22½	...	...
No. 3 ..... lb.	.15	.15½	.15	.15½	...	...
Kino, tins ..... lb.	.70	.80	.70	.80	.75	.80
Mastic ..... lb.	.55	.55½	.46	.55½	.35	.55½
Sandarac, prime quality, 200 lb bgs & 300 lb cks ... lb.	.28⅛	.28⅝	.32½	.35½	.35	.50
Senegal, picked bgs ..... lb.	.20	.21	.20	.21	17	.21
Sorts ..... lb.	.11½	.12½	.09⅜	.12½	.08	.10
Thus, bbls ..... 280 lbs.	...	11.00	10.50	11.00	9.50	10.75
Strained ..... 280 lbs.	...	11.00	10.50	11.00	9.50	10.75
Tragacanth, No. 1, cases ..... lb.	1.25	1.30	1.15	1.30	1.00	1.20
No. 2 ..... lb.	1.15	1.20	1.05	1.20	...	...
No. 3 ..... lb.	1.00	1.05	.95	1.05	...	...
No. 4 ..... lb.	.90	.95	.85	.95	...	...
No. 5 ..... lb.	.80	.85	.75	.85	...	...
No. 6, bgs ..... lb.	.14	.15	.14	.15	...	...
Sorts, bgs ..... lb.	.11	.12	.11	.12	...	...
Yacca, bgs..... lb.	.03¼	.03¾	.03¼	.03¾	.03¼	.04

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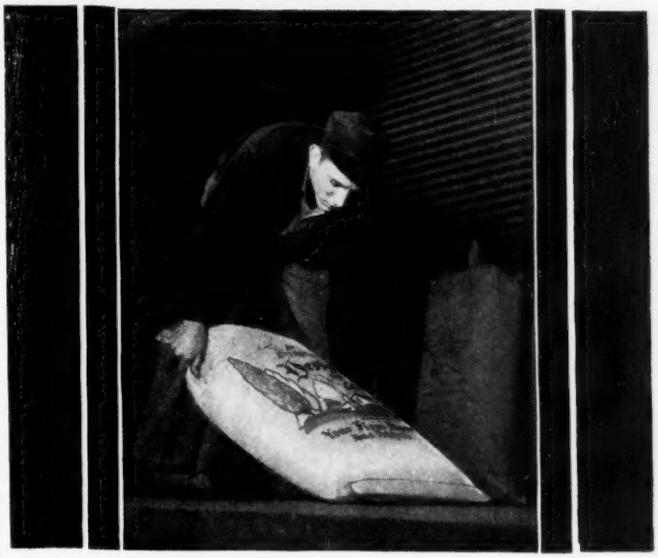

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Barium Carbonate	Magnesium Carbonate
Bone Ash	Manganese Dioxide
Borax	Nickel Oxide
Boracic Acid	Potassium Bichromate
Cadmium Sulphide	Potassium Carbonate
Cerium Hydrate	Potassium Nitrate
Chrome Oxide	Powder Blue
Cobalt Oxide	Selenium
Copper Oxide	Soda Ash
Copper Scale	Sodium Bicromate
Copper Sulphate	Sodium Nitrate
Cryolite	Sodium Selenite
Decorating Materials	Sodium Silico Fluoride
Feldspar	Sodium Uranate
Fluorspar	Sulphur
Frosting Mixtures	Tartaric Acid
Fusible Glass Colors	Tin Oxide
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Glass Enamels, White	Zinc Oxide
Glauber's Salts	Miscellaneous Chemicals
Gold	

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Helium
Mercuric Chloride

Prices

		Current Market	1935 Low	1935 High	1934 Low	1934 High
Helium, cyl. (200 cu. ft.)	cyl.	...	25.00	...	25.00	25.00	25.00
Hematite crystals, 400 lb bbls	lb.	.16	.18	.16	.18	.16	.18
Paste, 500 bbls	lb.	...	.11	...	.11	...	.11
Hemlock 25%, 600 lb bbls wks	lb.	...	.02⅞	...	.02⅞	.02⅞	.04½
tks	lb.	...	.02½	...	.02½	...	...
Hexalene, 50 gal drs wks	lb.	...	.30	...	.30	...	.30
Hexane, normal 60-70°C. Group 3, tks	gal.	...	.14	...	.14	...	.14
Hexamethylenetetramine, drs	lb.	.37	.39	.37	.39	.37	.39
Hexyl Acetate, delv drs	lb.	.12	.12½	.12	.12½	.12	.12½
tks	lb.	...	.11½	...	.11½	...	...
Hoof Meal, f.o.b. Chicago unit		...	2.50	2.50	2.70	1.85	2.70
South Amer. to arrive unit		...	1.85	...	1.85	1.65	1.80
Hydrogen Peroxide, 100 vol, 140 lb cbys	lb.	.20	.21	.20	.21	.20	.21
Hydroxyamine Hydrochloride	lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls	lb.	.17	.20	.17	.20	.17	.20
Indigo Madras, bbls	lb.	1.25	1.30	1.25	1.30	1.25	1.30
20% paste, drs	lb.	.15	.18	.15	.18	.15	.18
Synthetic, liquid	lb.	...	.12	...	.12	...	.12
Iodine, crude	per kilo	...	15s 1d	...	15s 1d	...	15s 1d
Resublimed, kgs	lb.	1.65	1.75	...	1.90	1.90	2.30
Irish Moss, ord, bales	lb.	.09	.10	.09	.10	.07	.10
Bleached, prime, bales	lb.	.18	.19	.18	.19	.14	.19
Iron Acetate Liq. 17°, bbls	lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride.							
Nitrate, coml, bbls	100 lb.	2.75	3.25	2.75	3.25	2.75	3.25
Oxide, English	lb.	.07½	.08¾	.07½	.08¾	.07½	.09
Isobutyl Carbinol (128-132°C) drs, wks	lb.	.33	.34	.33	.34	.34	.34
tks, wks	lb.	...	.32	...	.32	.32	.326
Isopropyl Acetate, tks	lb.	...	.07½	...	.07½	.07	.07½
drs, frt allowed	lb.	.08½	.09	.08½	.09	...	...
Ether, see Ether, isopropyl.							
Keiselguhr, 95 lb bgs, NY, Brown	ton	60.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate, brown, broken, f.o.b. NY, bbls	lb.	...	.09½	...	.09½	.09½	.09½
White, broken, bbls	lb.	...	.11	...	.11	.11	.11
cryst bbls	lb.	...	.10½	...	.10½	.10½	.10½
gran, bbls	lb.	...	.11	...	.11	.11	.11
powd, bbls	lb.	...	.11¼	...	.11¼	.11¼	.11¼
Arsenate, East, jobbers, drs	lb.	.09	.09½	.09	.09½	...	...
Dealers, drs	lb.	.09¼	.10½	.09¼	.10½	...	...
West, jobbers, drs	lb.	...	.09	...	.09	...	...
dealers, drs	lb.	...	.10	...	.10	...	...
Linoleate, solid bbls	lb.	.26	.26½	.26	.26½	.26	.26½
Metal, c-l, NY	100 lb	...	4.15	3.50	4.15	3.50	4.25
Red, dry, 95% Pb_3O_4, delv	lb.	.0685	.07¾	.06	.0775	.06	.07¾
97% Pb_3O_4, delv	lb.	.0710	.08	.06¼	.08	...	...
98% Pb_3O_4, delv	lb.	.0735	.08¼	.06½	.0825	...	...
Nitrate, 500 lb bbls, wks	lb.	.10	.14	.10	.14	.10	.14
Oleate, bbls	lb.	.15	.16	.15	.16	.15	.16
Resinate, precip, bbls	lb.	...	.14	...	.14	.14	.18½
Stearate, bbls	lb.	.22	.23	.22	.23	.22	.23
White, 500 lb bbls, wks	lb.	.06½	.07	.06½	.07	.06½	.07
Sulfate, 500 lb bbls, wks	lb.	...	.06	...	.06	...	.06
Lime, chemical quicklime, f.o.b., wks, bulk	ton	7.00	7.25	7.00	7.25	...	...
Hydrated, f.o.b., wks	ton	8.50	12.00	8.50	12.00	...	...
Lime Salts, see Calcium Salts.							
Lime sulfur, sol, jobbers, tks	gal.	...	.10	...	.10	...	...
drs	gal.	.13½	.15½	.13½	.15½	...	...
Dealers, tks	gal.	...	.10½	...	.10½	...	...
drs	gal.	.14	.16½	.14	.16½	...	...
Linseed Meal, bgs	ton	...	29.50	25.50	40.00	30.50	41.00
Litharge, coml, delv, bbls	lb.	.0585	.06¾	.05	.06¾	.051	.06¾
Lithopone, dom, ordinary, delv, bgs	lb.	.04½	.04¾	.04½	.04¾	.04½	.04¾
bbls	lb.	.04¾	.05	.04¾	.05	.04¾	.05
High strength, bgs	lb.	.06	.06¼	.06	.06¼	.06	.06¼
bbls	lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Titanated, bgs	lb.	.06	.06¼	.06	.06¼	.06	.06¼
bbls	lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Logwood, 51°, 600 lb bbls	lb.	.08½	.10½	.08½	.10½	.08½	.12½
Solid, 50 lb boxes	lb.	.13½	.17½	.13½	.17½	.13½	.17½
Sticks	ton	24.00	26.00	24.00	26.00	24.00	26.00
Madder, Dutch	lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl	ton	60.00	65.00	60.00	65.00	55.00	65.00
Magnesium Carb, tech, 70 lb bgs, wks	lb.	.06	.06½	.06	.06½	.06	.06½
Chloride flake, 375 lb drs, c-l, wks	ton	36.00	39.00	36.00	39.00	34.00	39.00
Magnesium fluosilicate, crys, 400 lb bbls, wks	lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb bbls	lb.	...	.42	...	.42	...	.42
Heavy, 250 lb bbls	lb.	...	.50	...	.50	...	.50
Palmitate, bbls	lb.	.23	.24	.22	.24	.21	.23
Stearate, bbls	lb.	.20	.22	.19	.22	...	...
Linoleate, lig drs	lb.	.18	.19	.18	.19	.18	.19
Resinate, fused, bbls	lb.	.08¼	.08½	.08¼	.08½	.08¼	.08½
precip, bbls	lb.	...	.12	...	.12	.11½	.12½
Manganese Borate, 30%, 200 lb bbls	lb.	.15	.16	.15	.16	.15	.16
Chloride, 600 lb cks	lb.	.09	.12	.09	.12	.07	.12
Dioxide, tech (peroxide), drs	lb.	.03¾	.06	.03¾	.06	.03¾	.06
Mangrove 55%, 400 lb bbls	lb.	...	.04	...	.04	...	.04
Bark, African	ton	28.00	29.00	28.00	30.00	26.00	32.00
Marble Flour, blk	ton	12.00	13.00	12.00	13.00	12.00	13.00
Mercuric chloride	lb.	.71	.76	.71	.93	.73	.93

Current — Mercury Orthodichlorobenzene

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Mercury metal ...76 lb. flasks	69.50	71.50	69.00	76.50	66.50	79.00
Meta-nitro-aniline .....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls .....lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb bbls .....lb.	.80	.84	.80	.84	.80	.84
Peroxide, 100 lb cs ....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Silicofluoride, bbls .....lb.	.09	.10	.09	.10	.09	.11
Stearate, bbls .....lb.	.19	.20	.19	.20	.19	.20
Meta-toluene-diamine, 300 lb bbls .....lb.	.67	.69	.67	.69	.67	.69
Methanol, 95%, frt allowed, drs .....gal. *o*	.37½	.58	.37½	.58	.37½	.58
tks, frt allowed ....gal. *o*	.33	.36½	.33	.36½	.33	.36½
97% frt allowed, drs gal. *o*	.38½	.59	.38½	.59	.38½	.59
tks, frt allowed ....gal. *o*	.34	.37½	.34	.37½	.34	.37½
Pure, frt allowed, drs gal. *o*	.40	.61	.40	.61	.40	.61
tks, frt allowed ....gal. *o*	.35½	.39	.35½	.39	.35½	.39
Synthetic, frt allowed, drs .....gal. *o*	.40	.61	.40	.61	.40	.61
tks, frt allowed ....gal. *o*	.35½	.39	.35½	.39	.35½	.39
Methyl Acetate, dom, 98-100%, drs .....lb.	.18	.18½	.18	.18½	.18	.18½
Synthetic, 410 lb drs ..lb.	.16	.17	.16	.17	.16	.17
tks .....lb.	...	.15	...	.15	.15	.15
Acetone, frt allowed, drs .....gal. *p*	.49½	.68½	.49½	.73½	...	...
tks, frt allowed, drs gal. *p*	.44	...	.44	.52½	...	...
Synthetic, frt allowed, east of Rocky M., drs gal. *p*	.57½	.60	.57½	.60	.57½	.60
tks, frt allowed	...	.53	...	.53	...	...
West of Rocky M., frt allowed, drs ....gal. *p*	.60	.63	.60	.63	...	...
tks, frt allowed ..gal. *p*	...	.56	...	.56	...	...
Hexyl Ketone, pure, drs lb.	...	.60	...	.60	.60	1.20
Anthraquinone .....lb.	.65	.67	.65	.67	.65	.67
Butyl Ketone, tks .....lb.	...	.10½	...	.10½	.10½	.10½
Chloride, 90 lb cyl .....lb.	...	.45	...	.45	.45	.45
Ethyl Ketone, tks .....lb.	...	.07½	...	.07½	.07½	.07½
Propyl carbinol, drs ...lb.	.60	.75	.60	.75	.60	.75
Mica, dry grd, bgs, wks ..lb.	35.00	...	35.00	...	...	...
Michler's Ketone, kgs ....lb.	...	2.50	...	2.50	...	2.50
Molasses, blackstrap, tks, f.o.b. NY .....gal.	.08	.08¼	.07¾	.08¼	.06	.09
Monoamylamine, drs, wks lb.	...	1.00	...	1.00	...	1.00
Monochlorobenzene, see Chlorobenzene, mono.						
Monoethanolamine, tks, wks lb.	...	.30	...	...	...	...
Monomethylparaminosulfate, 100 lb drs .....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Myrobalans 25%, liq bbls..lb.	...	.04¼	...	.04¼	.03¾	.04¼
50% Solid, 50 lb boxes lb.	.06	.06¼	.06	.06¼	.06	.06¼
J1 bgs .....ton	23.50	24.50	23.50	27.00	24.50	32.00
J2 bgs .....ton	...	14.75	15.00	15.75	15.75	18.00
R2 bgs .....ton	...	15.25	16.00	16.50	16.25	18.00
Naphtha. v.m. & p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-white, tks .....gal.	...	.30	.26	.30	.26	.30
drs, c-l .....gal.	...	.35	.31	.35	.31	.35
Naphthalene, dom, crude, bgs, wks .....lb.	1.95	2.30	1.65	2.40	...	...
Imported, cif, bgs ....lb.	...	1.95	1.90	1.95	1.75	1.90
Dyestuffs, bgs, bbls, Eastern wks .....lb.	.04¼	.04¼	.04¼	.04¼	...	...
Balls, ref'd, bbls, Eastern wks .....lb.	.04½	.05¼	.04½	.05¼	...	...
Flakes, ref'd, bbls, Eastern wks .....lb.	.04½	.05¼	.04½	.05¼	...	...
Dyestuffs, bgs, bbls, Mid-West wks .....lb. *q*	.04¾	.05¼	.04¾	.05¼	...	...
Balls, ref'd, bbls, Mid-West wks .....lb. *q*	.05	.05¾	.05	.05¾	...	...
Flakes, ref'd, bbls, Mid-West wks .....lb. *q*	.05	.05¾	.05	.05¾	...	...
Nickel Chloride, bbls .....lb.	.18	.19	.18	.19	.18	.19
Oxide, 100 lb kgs, NY..lb.	.35	.37	.35	.37	.35	.37
Salt, 400 lb bbls, NY ...lb.	.12½	.13	.12½	.13	.11½	.13
Single, 400 lb bbls, NY lb.	.11½	.12	.11½	.12	.11½	.12
Metal ingot .....lb.	...	.35	...	.35	.35	.35
Nicotine, free 50%, 8 lb tins, cases	8.25	10.15	8.25	10.15	8.25	10.15
Sulfate, 55 lb drs .....lb.	.77	.80	.67	.80	.67	.75
Nitre Cake, blk .....ton	12.00	14.00	12.00	14.00	12.00	14.00
Nitrobenzene, redistilled, 1000 lb drs, wks .....lb.	.09	.11	.09	.11	.09	.11
tks .....lb.	...	.08½	...	.08½	...	.08½
Nitrocellulose, c-l-l cl, wks lb.	.27	.34	.27	.34	.27	.34
Nitrogenous Mat'l,bgs, imp unit	...	2.30	2.25	2.75	...	...
dom, Eastern wks ....unit	...	2.25	2.25	2.40	2.35	3.25
dom, Western wks ....unit	...	2.00	1.90	2.30	...	...
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Aleppy, bgs .....lb.	.16	.18	.12	.18	.18	.20
Chinese, bgs .....lb.	.19	.20	.19	.20	.17	.20
Oak Bark Extract, 25%, bbls lb.	...	.03½	...	.03½	.03½	.03½
tks .....lb.	...	.02¾	...	.02¾	...	...
Octyl Acetate, tks, wks ...lb.	...	.15	...	...	...	...
Orange-Mineral, 1100 lb cks NY .....lb.	.09¾	.10¼	.09¼	.10¼	.09¼	.10½
Orthoaminophenol, 50 lb kgs. lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	.82	.84	.82	.84	.82	1.15
Orthochlorophenol, drs ....lb.	.50	.65	.50	.65	.50	.65
Orthocresol, drs .....lb.	.13	.15	.13	.15	.13	.15
Orthodichlorobenzene, 1000 lb drs .....lb.	.05½	.06	.05½	.06	.05½	.06

o Country is divided in 5 zones, prices varying by zone. In drum prices range covers both zone and c-l and lcl quantities in the 5 zones; in each case, bbl. prices are 2½c higher; synthetic is not shipped in bbls.; *p* Country is divided into 5 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila. or N. Y.

' ' ' Modern CHEMICAL Developments

XXI

60. SUPERIOR PAINT THINNER

Hercules Steam-distilled Wood Turpentine is a better solvent, has better leveling qualities, shows fewer brush marks, and will not discolor whites or affect colors.

61. RAPID DRYING PRINTING INKS

Drying time of printing inks can be reduced greatly by the use of inks made with nitrocellulose.

62. FOR PROCESSING COTTON

Kier assistants containing Yarmor Pine Oil, made soluble, penetrate cotton rapidly and thoroughly. The soluble pine oil kier assistant loosens the fatty and waxy products and holds them in suspension, making possible a thorough rinse. This eliminates spotty kier work and produces bright, white goods of soft texture.

63. TEXTILE MILL PROTECTION

Finishes properly compounded with Tornesit, the new chlorinated rubber base for paints, provide a tough film that dries rapidly and maintains its hardness in the humid atmosphere of textile mills. Tornesit paints are also highly resistant to acids, alkalies, and other chemicals and adhere tenaciously to steel and concrete.

64. CHECKS VARNISH SKINNING

Solvenol No. 1 retards the skinning that takes place in quick-drying, chinawood oil varnishes. It does not oxidize as readily as turpentine and largely preserves the original consistency of varnishes in which it is used.

65. FINISHING WALL BOARD

A waterproof finish may be applied to press board with nitrocellulose lacquer. This also protects the board against dirt and grease; it can be cleaned easily if soiled. Pigmented lacquers may be used to eliminate the necessity for painting by the user.

66. CHEMICAL SHOW EXHIBIT

Products mentioned in this column, and many others, will be exhibited in the Hercules Display at the Chemical Show, Grand Central Palace, New York, December 2 to 7. Technical representatives will be present.

More detailed information on any of the above subjects can be secured by filling in this coupon.

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Orthonitrochlorobenzene Phloroglucinol — Prices

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Orthonitrochlorobenzene, 1200 lb drs, wks ..... lb.	.28	.28	.29	.28	.29
Orthonitrotoluene, 1000 lb drs, wks ..... lb.	.07	.07	.10	.05½	.06
Orthonitrophenol, 350 lb drs ..... lb.	.52	.52	.80	.52	.80
Orthotoluidine, 350 lb bbls, l-c-l ..... lb.	.14½	.14½	.15	.14	.15
Orthonitroparachlorphenol, tins ..... lb.	.70	.70	.75	.70	.75
Osage Orange, cryst ..... lb.	.17	.17	.25	.16	.25
51 deg liquid ..... lb.	.07	.07	.07¾	.07	.07¾
Powd, 100 lb bgs ..... lb.	.14½	.14½	.15	.14½	.15
Paraffin, refd, 200 lb cs slabs 122-127 deg M P ..... lb.	.04	.04	.04¾	.04½	.04¾
128-132 deg M P ..... lb.	.05	.05	.0515	.04¾	.0515
133-137 deg M P ..... lb.	.0575	.0575	.06	.05	.06
Para aldehyde, 110-55 gal drs ..... lb.	.16	.16	.18	.16	.18
Aminoacetanilid, 100 lb kgs ..... lb.	...	...	.85	.52	.85
Aminohydrochloride, 100 lb kgs ..... lb.	1.25	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	...	1.05	.78	1.05
Chlorophenol, drs ..... lb.	.50	.50	.65	.50	.65
Coumarone, 330 lb drs .. lb.	...	...	...	...	...
Cymene, refd, 110 gal dr ..... gal.	2.25	2.25	2.50	2.25	2.50
Dichlorobenzene 150 lb bbls wks ..... lb.	.16	.16	.20	.16	.20
Formaldehyde, bbls, wks lb.	.38	.38	.39	...	...
Nitroacetanilid, 300 lb bbls ..... lb.	.45	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wks ..... lb.	.48	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs, wks ..... lb.	.23½	.23½	.24	.23½	.24
Nitro-orthotoluidine, 300 lb bbls ..... lb.	2.75	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	.45	.45	.50	.45	.50
Nitrosodimethylaniline, 120 lb bbls ..... lb.	.92	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	.35	.35	.37	.35	.37
Phenylenedamine, 350 lb bbls ..... lb.	1.25	1.25	1.30	1.25	1.30
Para Tertiary amyl phenol, wks, drs ..... lb.	.32	.32	.50	.32	.50
Toluenesulfonamide, 175 lb bbls ..... lb.	.70	.70	.75	.70	.75
tks, wks ..... lbs.	...	...	.31	...	...
Toluenesulfonchloride, 410 lb bbls, wks ..... lb.	.20	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks ..... lb.	.56	.56	.60	.56	.60
Paris Green, Arsenic Basis 100 lb kgs ..... lb.	...	...	.24	.23	.24
250 lb kgs ..... lb.	...	...	.22	...	.22
Perchlorethylene, 50 gal drs ..... lb.	...	...	.15	...	.15
Persian Berry Ext, bbls .. lb.	.55	.55	Nom.	.55	Nom.
Pentane, normal, 28-38°C, group 3 tks ..... gal.	...	...	.09	.09	.09
drs, group 3 ..... gal.	.10	.10	.15	...	...
Petrolatum, dark amber, bbls ..... lb.	.02⅜	.02	.02⅞	...	...
Light, bbls ..... lb.	.02⅞	.02½	.03⅜	...	...
Medium, bbls ..... lb.	.02⅝	.02¼	.03⅛	...	...
Dark green, bbls ..... lb.	.02½	.02½	.02¾	...	...
White, lily, bbls ..... lb.	.05½	.05¼	.06½	...	...
White, snow, bbls ..... lb.	.06½	.06¼	.07½	...	...
Red, bbls ..... lb.	.02⅜	.02¼	.02⅞	...	...
Petroleum Ether, 30-60°, group 3, tks ..... gal.	...	...	.13	.11	.13
drs, group 3 ..... gal.	.15	.15	.16	.15	.17

PETROLEUM SOLVENTS AND DILUENTS

Cleaners naphthas, group 3, tks, wks ..... gal.	.06⅞	.06⅞	.07¼	...	...
Bayonne, tks, wks .. gal.	...	...	.09	...	...
West Coast, tks .... gal.	...	...	.15	...	...
Hydrogenated naphthas, frt allowed East, tks ... gal.	...	...	.17½	...	...
No. 2, tks ..... gal.	...	...	.22½	...	...
No. 3, tks ..... gal.	...	...	.17½	...	...
No. 4, tks ..... gal.	...	...	.22½	...	...
Lacquer diluents, tks, Bayonne ..... gal.	.12	.12	.12½	.12	.12½
Group 3, tks ..... gal.	.07⅞	.07⅞	.08	.06⅞	.08⅜
Naphtha, V.M.P., East, tks, wks ..... gal.	...	...	.09	.09	.09½
Group 3, tks, wks ... gal.	.06⅞	.06⅞	.07¼	.06¼	.07¼
Petroleum thinner, East, tks, wks ..... gal.	...	...	.09	.09	.09
Group 3, tks, wks ... gal.	.05⅞	.05⅞	.06¼	.05⅞	.06⅜
Rubber Solvents, stand grd, East, tks, wks ..... gal.	...	...	.09	.09	.09½
Group 3, tks, wks .. gal.	.06⅞	.06⅞	.07¼	.06⅜	.06⅞
Stoddard Solvent, East, tks, wks ..... gal.	...	...	.09	.09	.09½
Group 3, tks, wks ... gal.	.06⅜	.06⅜	.07	.05¾	.07⅛
Phenol, 250-100 lb drs .... lb.	.14¼	.14¼	.15	.14¼	.15
Phenyl-Alpha-Naphthylamine, 100 lb kgs ..... lb.	...	...	1.35	...	1.35
Phenyl Chloride, drs ..... lb.	...	...	.16	...	.16
Phenylhydrazine Hydrochloride ..... lb.	2.90	2.90	3.00	2.90	3.00
Phloroglucinol, tech, tins .. lb.	15.00	15.00	16.50	15.00	16.50
CP, tins ..... lb.	20.00	20.00	22.00	20.00	22.00

Current

Phosphate Rock
Rosin Oil

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Phosphate Rock, f.o.b. mines					
Florida Pebble, 68% basis ...ton	...	3.40	3.25	3.40	2.85	3.25
70% basis ...ton	...	3.90	...	3.90	3.35	3.90
72% basis ...ton	...	4.40	...	4.40	3.85	4.40
75-74% basis ...ton	...	5.40	...	5.40	4.90	5.40
75% basis ...ton	...	5.50	...	5.50	5.05	5.50
77-80% basis ...ton	...	6.50	...	6.50	5.90	6.50
Tennessee, 72% basis ..ton	...	4.75	...	4.75	4.75	5.00
Phosphorous Oxychloride 175 lb cyl ...lb.	.16	.20	.16	.20	.16	.20
Red, 110 lb cases ...lb.	.44	.45	.44	.45	.44	.45
Yellow, 110 lb cs, wks..lb.	.28	.33	.28	.33	.28	.33
Sesquisulfide, 100 lb cs..lb.	.38	.44	.38	.44	.38	.44
Trichloride, cyl ...lb.	.16	.20	.16	.20	.16	.20
Phthalic Anhydride, 100 lb drs, wks ...lb.	.14½	.15½	.14½	.15½	.14½	.15½
Pine Oil, 55 gal drs or bbls						
Destructive dist ...lb.	.44	.46	.44	.50	.48	.62
Steam dist wat wh bbls gal.	.64	.65	.64	.65	.64	.65
tks ...gal.	...	.59	...	.59	...	...
Straw color, bbls ...gal.	...	.59	...	.59	...	...
tks ...gal.	...	.54	...	.54	...	...
Pitch Hardwood, wks ...ton	...	15.00	15.00	20.00	...	20.00
Burgundy, dom, bbls, wks ...lb.	...	.03½	...	.03½	...	...
Imported ...lb.	.11	.13	.11	.13	...	...
Coaltar, bbls, wks ...ton	...	19.00	...	19.00	...	...
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls ...bbl.	3.75	4.25	3.75	4.25	...	...
Stearin, drs ...lb.	.03	.04½	.03	.04½	...	...
Platinum, refd ...oz.	35.00	36.00	35.00	36.00	35.00	38.00

POTASH

Potash, Caustic, wks, sol..lb.	.06¼	.06½	.06¼	.06½	.06¼	.07⅜
flake ...lb.	.07	.07⅜	.07	.07⅜	.07	.08¼
Liquid tks ...lb.	...	.02⅞	...	.02⅞	.02⅞	.03⅛
Potash Salts, Rough Kainit 14% basis ...ton	...	8.50	...	8.50	8.50	9.70
Manure Salts, imported						
20% basis, blk ...ton	...	11.00	8.60	11.00	8.60	12.00
30% basis, blk ...ton	...	14.40	12.90	14.40	12.90	19.15
Domestic, cif ports, blk unit	...	.43	...	.43	...	...
Potassium Acetate ...lb.	.26	.28	.26	.28	.26	.28
Potassium Muriate, 80% basis bgs ...ton	...	22.50	22.00	22.50	22.00	37.15
Dom, blk ...unit	...	.45	.40	.45	...	...
Pot & Mag Sulfate, 48% basis bgs ...ton	22.25	22.50	19.50	22.50	22.50	25.00
Potassium Sulfate, 90% basis bgs ...ton	...	33.75	33.75	35.00	35.00	42.15
Potassium Bicarbonate, USP 320 lb bbls ...lb.	.07½	.09	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb cks ...lb.	.08⅛	.08⅝	.08⅛	.08⅝	.08⅛	.08⅝
Binoxalate, 300 lb bbls..lb.	.22	.23	.22	.23	.14	.23
Bisulfate, 100 lb kgs ..lb.	.35	.36	.35	.36	.33	.36
Carbonate, 80-85% calc 800 lb cks ...lb.	.07¼	.07½	.07½	.07⅞	.07	.07⅞
liquid, tks ...lb.	...	...	...	...	...	...
drs, wks ...lb.	.03½	.03¾	...	...	...	...
Chlorate crys, powd, 112 lb kgs, wks ...lb.	...	.09¾	...	.09¾	.08½	.09¾
gran, kgs ...lb.	.12	.13	.12	.13	...	...
powd, kgs ...lb.	.08¾	.09¾	.08¾	.09¾	...	...
Chloride, crys, bbls ...lb.	.04	.04¾	.04	.04¾	.04	.04¾
Chromate, kgs ...lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb cases ..lb.	.55	.57½	.55	.57½	.55	.60
Iodide, 75 lb bbls ...lb.	...	1.25	1.25	1.40	1.40	2.70
Metabisulfite, 300 lb bbls lb.	...	.15	...	.15	.10½	.15
Oxalate, bbls ...lb.	.16	.24	.16	.24	.16	.24
Perchlorate, cks, wks ..lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys, 500 & 1000 lb drs, wks lb.	.18½	.19½	.18½	.19½	.18½	.19½
Prussiate, red, 112 lb kgs lb.	.35	.38½	.35	.38½	.35	.39
Yellow, 500 lb casks ..lb.	.18	.19	.18	.19	.18	.19
Tartrate Neut, 100 lb kgs lb.	...	.21	...	.21	...	.21
Titanium Oxalate, 200 lb bbls ...lb.	.32	.35	.32	.35	.32	.35
Propane, group 3, tks ...	...	.07	...	.07	...	.07
Pumice Stone, lump bgs ..lb.	.04½	.06	.04½	.06	.04½	.06
250 lb bbls ...lb.	.05	.07	.05	.07	.05	.07
Powd, 350 lb bgs ...lb.	.02½	.03	.02½	.03	.02½	.03
Putty, coml, tubs ...100 lb.	...	2.75	...	2.75	2.25	2.75
Linseed Oil, kgs ...100 lb.	...	4.50	...	4.50	4.00	4.50
Pyridine, 50 gal drs ...gal.	...	1.25	...	1.25	...	1.25
Pyrites, Spanish cif Atlantic ports, blk ...unit	.12	.13	.12	.13	.12	.13
Pyrocatechin, CP, drs, tins ...lb.	2.75	3.00	2.75	3.00	2.75	3.00
Quebracho, 35% liq tks ...lb.	...	.02⅝	...	.02⅝	.02¼	.02⅝
450 lb bbls, c-l ...lb.	...	.03⅛	...	.03⅛	.02¾	.03⅛
Solid, 63%, 100 lb bales cif ...lb.	...	.03⅝	...	.03⅝	.02⅞	.03⅝
Clarified, 64%, bales..lb.	...	.03⅞	...	.03⅞	.03	.03⅞
Quercitron, 51 deg liq, 450 lb bbls ...lb.	.06	.06½	.06	.06½	.05½	.06½
Solid, 100 lb boxes ...lb.	.10	.12	.10	.12	.09½	.13
R Salt, 250 lb bbls, wks ..lb.	.44	.45	.44	.45	.40	.45
Resorcinol tech, cans ...lb.	.75	.80	.75	.80	.65	.80
Rochelle Salt, cryst ...lb.	.14	.14½	.14	.15	.12½	.16
Powd, bbls ...lb.	.13	.13½	.13	.13½	...	...
Rosin Oil, bbls, first run gal.	...	.38	.36	.45	.45	.48
Second run ...gal.	...	.45	.43	.48	.48	.53
Third run, drs ...gal.	...	.53	.50	.60	...	...

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Rosins
Sodium Nitrate

Prices

		Current Market	1935 Low	1935 High	1934 Low	1934 High
Rosins 600 lb bbls, 280 lb unit ex. yard NY:						
B	...	5.00	4.65	5.25	4.50	5.75
D	...	5.10	5.02½	5.25	4.60	5.85
E	...	5.15	5.15	5.45	4.80	6.50
F	...	5.20	5.20	5.90	5.00	6.75
G	...	5.25	5.25	5.95	5.05	6.75
H	...	5.25	5.25	5.97½	5.10	6.75
I	...	5.25	5.25	6.00	4.05	5.20
K	...	5.27½	5.27½	6.00	5.30	6.75
M	...	5.35	5.35	6.02½	5.45	6.80
N	...	5.80	5.75	6.40	5.50	6.80
WG	...	6.00	5.95	6.87½	5.70	6.80
WW	...	6.25	6.25	7.55	5.90	6.85
Rosins, Gum, Savannah (280 lb unit):						
B	...	3.75	3.40	4.00	...	...
D	...	3.85	3.70	4.20	...	...
E	...	3.90	3.90	4.20	...	...
F	...	3.95	3.95	4.65	...	...
G	...	4.00	4.00	4.75	...	...
H	...	4.00	4.00	4.75	...	...
I	...	4.00	4.00	4.75	...	...
K	...	4.02½	4.02½	4.75	...	...
M	...	4.10	4.10	4.75	...	...
N	...	4.55	4.50	5.15	...	...
WG	...	4.75	4.70	5.60	...	...
WW	...	5.00	5.15	6.25	...	...
X	...	5.00	5.20	6.25	...	...
Rosins, Wood, wks (280 lb unit), wks, FF	...	4.05	4.05	6.35	...	...
I	...	4.30	4.30	7.00	...	...
M	...	4.55	4.55	7.25	...	...
N	...	5.00	5.00	7.75	...	...
Rosin, Wood. c-l, FF grade, NY	...	4.92	4.92	5.30	5.10	6.13
Rotten Stone, bgs mines ..ton	23.50	24.00	23.50	24.00	23.50	24.00
Lump, imported, bbls ..lb.	.05	.07	.05	.07	.05	.07
Selected, bbls .....lb.	.08	.10	.08	.10	.08	.12
Powdered, bbls .....lb.	.02½	.05	.02½	.05	.02½	.05
Sago Flour, 150 lb bgs ....lb.	.02¾	.03¾	.02¾	.03¾	.02½	.03¾
Sal Soda, bbls, wks ..100 lb.	...	1.30	...	1.30	1.10	1.30
Salt Cake, 94-96%, c-l, wks .....ton	13.00	18.00	13.00	18.00	13.00	18.00
Chrome, c-l, wks .....ton	12.00	13.00	12.00	13.00	12.00	13.00
Saltpetre, double refd, gran, 450-500 lb bbls .....lb.	.059	.06¼	.059	.06¼	.059	.06¼
Powd, bbls .....lb.	.069	.07⅞	.069	.07⅞	...	...
Cryst, bbls .....lb.	.069	.08	.069	.08	...	...
Satin, White, 550 lb bbls ..lb.	...	.01½	...	.01½	...	.01½
Shellac, Bone dry, bbls ..lb. *r*	.21	.31	.19	.32	.26	.37
Garnet, bgs .....lb.	.18	.19	.17	.27	.26	.32
Superfine, bgs .....lb. *s*	.16	.17	.16	.28	.23	.31
T. N., bgs .....lb. *s*	.14	.15	.13	.25	...	...
Schaeffer's Salt, kgs .....lb.	.48	.50	.48	.50	.48	.50
Silver Nitrate, vials .....oz.	...	.44⅝	.38	.53¾	.31⅞	.40½
Slate Flour, bgs, wks ....ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.25	...	1.25	...	1.25
58% light, bgs .....100 lb.	...	1.23	...	1.23	...	1.25
blk .....100 lb.	...	1.05	...	1.05	...	1.05
paper bgs .....100 lb.	...	1.20	...	1.20	...	1.20
bbls .....100 lb.	...	1.50	...	1.50	...	1.50
Soda Caustic, 76% grnd & flake, drs .....100 lb.	...	3.00	...	3.00	...	3.00
76% solid, drs .....100 lb.	...	2.60	...	2.60	...	2.60
Liquid sellers, tks, 100 lbs.	...	2.25	...	2.25	...	2.25
Sodium Abietate, drs .....lb.	...	.08	...	.08	.03	.08
Acetate, tech, 450 lb bbls, wks .....lb.	.04½	.05	.04½	.05	.04½	.05
Alignate, drs .....lb.	...	.64	...	.64	.50	.64
Arsenate, drs .....lb.	...	.10½	...	.10½	.07¾	.10½
Arsenite, liq, drs .....gal.	.40	.75	.40	.75	.40	.75
Benzoate, USP, kgs .. lb.	.46	.48	.46	.48	.45	.48
Bicarb, 400 lb bbl, wks. 100 lb.	...	1.85	...	1.85	1.85	1.85
Bichromate, 500 lb cks, wks .....lb.	.06⅛	.06⅝	.06⅛	.06⅝	.06⅛	.06⅝
Bisulfite, 500 lb bbl, wks lb.	.03¼	.036	.03¼	.036	.03	.036
35-40% sol cbys, wks 100 lb.	1.95	2.10	1.95	2.10	...	...
Chlorate, bgs, wks .....lb.	.06¼	.07½	.06¼	.07½	.06¼	.07½
Chloride, tech .....ton	13.60	16.50	13.60	16.50	11.40	16.50
Cyanide, 96-98%, 100 & 250 lb drs, wks .....lb.	.15½	.17½	.15½	.17½	.15½	.17½
Fluoride, 90%, 300 lb bbls, wks .....lb.	.07¼	.08¼	.07¼	.08¼	.07¼	.09½
Hydrosulfite, 200 lb bbls, f.o.b. wks .....lb.	.18	.19	.18	.21	.19½	.21
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	2.50	3.00	2.50	3.00	2.40	3.00
Tech, reg cryst, 375 lb bbls, wks .....100 lb.	2.40	2.75	2.40	2.75	2.40	2.75
Iodide .....lb.	2.00	2.05	2.00	2.40	2.40	3.50
Metanilate, 150 lb bbls ..lb.	.41	.42	.41	.42	.41	.42
Metasilicate, gran, c-l, wks .....100 lb.	2.65	3.05	2.65	3.05	2.65	3.05
cryst, bbls, wks ..100 lb.	...	3.25	...	3.25	...	3.25
Monohydrate, bbls .....lb.	...	.02½	...	.02½	...	.02½
Napthenate, drs ..... lb.	...	.09	...	.09	.09	.13
Naphthionate, 300 lb bbl lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb bgs, c-l, NY .....ton	...	24.80	...	24.80	24.80	26.30
100 lb bgs .....ton	...	25.50	...	25.50	25.50	27.00
Bulk .....ton	...	23.50	...	23.50	23.50	24.50

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 3c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; *s* T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y.

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Sodium (continued)						
Nitrite, 500 lb bbls ....lb.	.07¼	.08	.07¼	.08	.07¼	.08
Orthochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls ..lb.	.17	.18	.17	.19	.18	.19
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	...	2.30	2.20	2.30	2.10	2.40
bgs, wks .....100 lb.	...	2.10	2.00	2.10	...	...
tri-sodium, tech, 325 lb bbls, wks .....100 lb.	...	2.70	2.60	2.70	2.60	2.70
bgs, wks .....100 lb.	...	2.50	2.50	2.60	...	...
Picramate, 160 lb kgs ..lb.	.67	.69	.67	.69	.69	.72
Prussiate, Yellow, 350 lb bbl, wks .....lb.	.11½	.12	.11½	.12	.11½	.12
Pyrophosphate, anhyd, 100 lb bbls .....lb.	.102	.132	.102	.15	...	.15
Silicate, 60°, 55 gal drs, wks .....100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40°, 35 gal drs, wks 100 lb.	...	.80	...	.80	...	.80
tks, wks .....100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY .....lb.	.04½	.04¾	.04¼	.04¾	.04¾	.06
Stannate, 100 lb drs ....lb.	.32½	.35½	.31	.38	.33½	.37½
Stearate, bbls .....lb.	.20	.25	.20	.25	.20	.25
Sulfanilate, 400 lb bbls..lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-l, wks .....100 lb. ‡	1.30	1.55	1.25	2.35	2.20	2.85
Sulfide, 80% cryst, 440 lb bbls, wks .....lb.	...	.02¼	...	.02¼	.02¼	.02½
62% solid, 650 lb drs, c-l, wks .....lb.	...	.03	...	.03	...	.03
Sulfite, cryst, 400 lb bbls, wks .....lb.	.023	.02½	.023	.02½	.02¼	.02½
Sulfocyanide, bbls .....lb.	.32	.42½	.32	.42½	.28	.42½
Tungstate, tech, crys, kgs .....lb.	...	.90	...	.90	.70	.90
Spruce Extract, ord, tks ..lb.	...	.01	...	.01	...	.01
Ordinary, bbls .....lb.	...	.01½	...	.01½	...	.01½
Super spruce ext, tks ...lb.	...	.01⅝	...	.01⅝	...	.01⅝
Super spruce ext, bbls ..lb.	...	.01⅞	...	.01⅞	...	.01⅞
Super spruce ext, powd, bgs .....lb.	...	.04	...	.04	...	.04
Starch, Pearl, 140 lb bgs .....100 lb.	3.58	3.78	3.36	3.78	2.81	3.76
Powd, 140 lb bgs ...100 lb.	3.68	3.88	3.46	3.66	2.71	3.66
Potato, 200 lb bgs .....lb.	.04½	.05½	.04½	.06	.05¼	.06
Imp, bgs .....lb.	.05¾	.06	.05¾	.06½	.06	.06½
Rice, 200 lb bbls .....lb.	...	.07¼	.07¼	.08½	.07½	.08½
Wheat, thick bgs .....lb.	...	.08¼	...	.08¼	.06¼	.08¼
Strontium carbonate, 600 lb. bbls, wks .....lb.	.07¼	.07½	.07¼	.07½	.07¼	.07½
Nitrate, 600 lb bbls, NY .....lb.	.08¾	.09½	.08¾	.09½	.08¾	.11
Sulfur	...	...	...	...	...	...
Crude, f.o.b. mines ....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour, coml, bgs ....100 lb.	1.60	2.35	1.60	2.35	1.60	2.35
bbls .....100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs ..100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls .....100 lb.	2.55	3.15	2.55	3.15	2.55	3.15
Extra fine, bgs .....100 lb.	2.40	3.00	2.40	3.00	2.40	3.00
Superfine, bgs .....100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls .....100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs .....100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls .....100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs .....100 lb.	2.35	3.10	2.35	3.10	2.35	3.10
bbls .....100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, red, 700 lb drs, wks .....lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs, wks lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl lb.	.08½	.10	.08½	.10	.07	.10
Multiple units, wks ....lb.	...	.06½	...	.06½	...	...
tks, wks .....lb.	...	.04¾	...	.04¾	...	...
Refrigeration, cyl, wks ...lb.	...	.13	...	.13	...	...
Multiple units, wks ....lb.	...	.09¼	...	.09¼	...	...
Sulfuryl Chloride .....lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd .....ton	50.00	57.00	50.00	62.00	58.00	75.00
dom, bgs, wks .....ton	...	35.00	...	35.00	...	...
Superphosphate, 16% bulk, wks .....ton	...	8.50	8.25	8.50	8.00	8.50
Run of pile .....ton	...	8.00	7.75	8.00	7.50	8.00
Talc, Crude, 100 lb bgs, NY .....ton	14.00	15.00	14.00	15.00	12.00	15.00
Refd, 100 lb bgs, NY ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bgs, NY ton	22.00	30.00	22.00	30.00	27.50	30.00
Refd, white, bgs .....ton	45.00	60.00	45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr ton	70.00	75.00	70.00	75.00	70.00	75.00
Refd, white, bgs, NY ton	75.00	80.00	75.00	80.00	75.00	80.00
Tankage Grd, NY ....unit ¤	2.35	2.50	2.35	2.75	2.50	3.25
Ungrd .....unit ¤	2.15	2.25	2.15	2.50	2.00	2.75
Fert grade, f.o.b. Chicago .....unit ¤	...	2.65	2.25	2.65	1.80	2.40
South American cif..unit ¤	2.75	2.85	2.45	3.15	2.75	3.10
Tapioca Flour, high grade, bgs .....lb.	.0215	.05	.0215	.05	.0215	.05
Tar Acid Oil, 15%, drs gal.	.22	.23	.21	.23	.21	.22
25%, drs .....gal.	.24	.25	.23	.25	.23	.24
Tar, pine, delv, drs .....gal.	.25	.26	.25	.26	...	...
tks, delv .....gal.	...	.20	...	.20	...	...
Tartar Emetic, tech .....lb.	.22¾	.23	.22¼	.23	.23	.23
USP, bbls .....lb.	.28	.28½	.28	.28½	.27	.28½
Terpineol, den grd, drs ...lb.	.13¾	.14¼	.13¾	.14¼	...	...
tks .....lb.	.13	.14	.13	.14	...	...
Tetrachlorethane, 50 gal drs lb.	.08½	.09	.08½	.09	.08½	.09
Tetralene, 50 gal drs, wks lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbl lb.	.20	.25	.20	.25	.20	.25

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Zinc Stearate
Prices

	Current Market	1935 Low	1935 High	1934 Low	1934 High
Tin, crystals, 500 lb bbls, wks ..lb.	.37	.37½	.36	.39½	.30	.40½
Metal, NY ..lb.	...	.5270	.456	.52	.50⅞	.55⅜
Oxide, 300 lb bbls, wks lb.	.54	.56	.51	.58	.55	.60
Tetrachloride, 100 lb drs, wks ..lb.	...	.25¼	.24¾	.26½	.25½	.28½
Titanium Dioxide, 300 lb bbls ..lb.	.17¼	.19¼	.17¼	.19¼	.17¼	.19¼
Barium Pigment, bbls ....lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Calcium Pigment, bbls ....lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Toluol, 110 gal drs, wks gal.	...	.35	...	.35	...	.35
8000 gal tks, frt allowed gal.	...	.30	...	.30	...	.30
Toluidine, mixed, 900 lb drs, wks ..lb.	.27	.28	.27	.28	.27	.28
Toner Lithol, red, bbls ....lb.	.75	.80	.75	.80	.75	.85
Para, red, bbls ..lb.	...	.75	...	.75	.75	.80
Toluidine, bgs ..lb.	...	1.35	...	1.35	...	1.35
Triacetin, 50 gal drs, wks lb.	.32	.36	.32	.36	.32	.36
Triamyl Borate, drs, wks lb.	...	.40	...	.40	...	.40
Triamylamine, drs, wks ...lb.	...	1.25	...	1.25	1.00	1.25
Trichlorethylene, 50 gal drs lb.	.09½	.10	.09½	.10	.09½	.10
Triethanolamine, 50 gal drs wks ..lb.	.26	.30	.26	.38	.35	.38
tks, wks ..lb.	...	.25	...	...	...	...
Tricresyl Phosphate, drs ..lb.	.21	.23	.21	.23	.19	.26
Triphenyl Guanidine .....lb.	.58	.60	.58	.60	.58	.60
Tripoli, airfloated, bgs, wks ..ton	27.50	30.00	27.50	30.00	...	...
Tungsten, Wolframite per unit	15.00	15.25	15.00	15.25	12.00	15.25
Turpentine (Spirits), c-l, NY dock, bbls ..gal.	...	.43¾	.43¾	.55½	.46¼	.63½
Savannah, bbls ..gal.	...	.38¾	.38¾	.50¼	.41¼	.58½
Jacksonville, bbls ..gal.	...	.38¾	.38¾	.50¼	.41¼	.58½
Wood Steam dist, bbls, c-l, NY ..gal.	...	.47	.45	.49	.41	.61
Urea, pure, 112 lb cases ..lb.	.15½	.17	.15½	.17	.15	.17
Fert grade, bgs c.i.f. ..ton	100.00	120.00	100.00	120.00	90.00	120.00
c.i.f. S.A. points ....ton	100.00	120.00	100.00	120.00	90.00	120.00
Urea Ammonia liq 55% NH_3, tks ..unit	...	.96	...	.96	...	.96
Valonia beard, 42%, tannin bgs ..ton	...	43.00	40.00	43.50	39.00	48.00
Cups, 32% tannin, bgs..ton	...	27.50	26.00	28.50	23.00	32.50
Mixture, bark, bgs ....ton	...	32.00	...	32.00	..	32.00
Vermillion, English, kgs ..lb.	1.48	1.61	1.48	1.70	1.41	1.73
Vinyl Chloride, 16 lb cyl ..lb.	..	1.00	...	1.00	...	1.00
Wattle Bark, bgs ..ton	29.00	30.00	29.00	32.00	29.50	34.00
Extract, 60°, tks, bbls ..lb.	...	.03¾	...	.03¾	.03⅝	.03⅞

WAXES

Wax, Bayberry, bgs .....lb.	.22	.23	.22	.23	.25	.30
Bees, bleached, white 500 lb slabs, cases .....lb.	.33½	.34	.33½	.34	.32	.37
Yellow, African, bgs ..lb.	.22	.23	.21	.23	.16	.22
Brazilian, bgs ....lb.	.21½	.23½	.21½	.25	...	...
Chilean, bgs .....lb.	.21½	.23½	.21½	.24½	...	...
Refined, 500 lb slabs, cases .....lb.	.27½	.28	.27½	.28	.21	.29
Candelilla, bgs .....lb.	.15½	.17	.10	.17	.10¼	.14½
Carnauba, No. 1, yellow, bgs .....lb.	.49	.51	.35	.51	.30	.40
No. 2, yellow, bgs ....lb.	.48	.51	.34	.51	.34	.41
No. 2, N. C., bgs ....lb.	.41½	.43½	.26½	.43½	.20	.29
No. 3, Chalky, bgs ...lb.	.38	.42½	.21	.42½	...	...
No. 3, N. C., bgs ....lb.	.37½	.43	.22½	.43	.16¼	.25
Ceresin, white, imp, bgs lb.	.43	.45	.43	.45	...	...
Yellow, bgs .....lb.	.36	.38	.36	.38	...	...
Domestic, bgs .....lb.	.08	.11	.08	.11	...	...
Japan, 224 lb cases ....lb.	.07½	.07¾	.06	.07¾	.06	.07½
Montan, crude, bgs ....lb.	.10¾	.11¾	.10½	.11¾	.10	.11
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.22	.24	.19	.24	.18	.20
Cakes, cases .....lb.	.23	.25	.20	.25	.19	.21
Whiting, prec 200 lb bgs, c-l, wks ..ton	...	15.00	12.00	15.00	...	...
Alba, bgs, c-l, NY ....ton	...	15.00	...	15.00	...	15.00
Gliders, bgs, c-l, NY ...ton	...	15.00	...	15.00	...	...
Wood Flour, c-l, bgs ....ton	18.00	30.00	18.00	30.00	18.00	30.00
Xylol, frt allowed, East 10° tks, wks .....gal.	.31	.33	.27	.33	.27	.29
Coml, tks, wks, frt allowed .....gal.	...	.30	.26	.30	...	.26
Xylidine, mixed crude, drs lb.	.36	.37	.36	.37	.36	.37
Zinc, Carbonate tech, bbls, NY .....lb.	.09½	.11	.09½	.11	.09½	.11
Chloride fused, 600 lb drs, wks .....lb.	.04½	.05¾	.04½	.05¾	.04¼	.05¼
Gran, 500 lb bbls, wks ..lb.	.05	.05¾	.05	.05¾	.05⅛	.06
Soln 50%, tks, wks..100 lb.	...	2.00	...	2.00	...	2.00
Cyanide, 100 lb drs ....lb.	.36	.41	.36	.41	.36	.41
Zinc Dust, 500 lb bbls, c-l, delv .....lb.	...	.066	.057	.066	.056	7½.071
Metal, high grade slabs, c-l, NY .....100 lb.	...	4.77½	4.05	4.77½	4.05	4.75
E. St. Louis .....100 lb.	...	4.40	3.70	4.40	3.70	4.46
Oxide, Amer, bgs, wks..lb.	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
French, 300 lb bbls, wks .....lb.	.06½	.10⅞	.06½	.10⅞	.05¾	.11⅛
Palmitate, bbls .....lb.	.22	.23	.21	.23	.20	.22
Perborate, 100 lb drs ...lb.	...	1.25	...	1.25	...	1.25
Peroxide, 100 lb drs ...lb.	...	1.25	...	1.25	...	1.25
Resinate, fused, dark, bbls lb.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Stearate, 50 lb bbls ....lb.	.19	.22	.18	.22	.18	.21

Current

	Current Market		1935 Low	1935 High	1934 Low	1934 High
Zinc Sulfate, crys, 400 lb bbl, wks ..... lb.	.028	.033	.028	.033	.02¾	.033
Flake, bbls ..... lb.	.035	.032	.035	.032	...	...
Sulfide, 500 lb bbls, delv lb.	.10¾	.11¾	.10¾	.11¾	.10¾	.13½
bgs, delv ..... lb.	.10½	.11½	.10½	.11½	...	...
Sulfocarbolate, 100 lb kgs ..... lb.	.24	.25	.24	.25	.21	.25
Zirconium Oxide, Nat kgs lb.	.02½	.03	.02½	.03	.02½	.03
Pure, kgs ..... lb.	.45	.50	.45	.50	.45	.50
Semi-refined, kgs ..... lb.	.08	.10	.08	.10	.08	.10

Oils and Fats

Castor, No. 3, 400 lb bbls.. lb.	.09¾	.10½	.09¾	.10½	.09¾	.10½
Blown, 400 lb bbls ..... lb.	.11½	.12¼	.11½	.16	.11½	12¾
China Wood, bbls spot NY lb.	.16½	.16¾	.094	.18	.07½	.099
Tks, spot NY ..... lb.	.159	.1610	.088	.1610	.07¼	.094
Coast, tks ..... lb.	...	.15¾	.087	.15¾	.06⅞	.094
Coconut, edible, bbls NY.. lb.	...	.09¼	.04	.12	.04¾	.10¾
Manila, tks, NY ..... lb.	...	.04	.03¾	.06¼	.02⅝	.03¾
Tks, Pacific Coast ... lb.	...	.03¾	.03⅜	.06	.02¼	.02½
Cod, Newfoundland, 50 gal bbls ..... gal.	.35	.36	.36	.38	.34	.40
Copra, bgs, NY ..... lb.	...	.0210	.02	.038	.0012	.021
Corn, crude, tks, mills .... lb.	...	.09¼	.08¾	.11	.03½	.09½
Refd, 375 lb bbls, NY .. lb.	.11½	.11¾	.11½	.14	.05¾	.12
Cottonseed, see Oils and Fats News Section.						
Degras, American, 50 gal bbls, NY ..... lb.	.05¼	.06¾	.04½	.06	.02¾	.05½
English, brown, bbls, NY lb.	.04¾	.05½	.04¾	.06½	.03¾	.05⅜
Greases, Yellow ..... lb.	.05½	.05⅜	.05	.06⅜	.02⅜	.05⅛
White, choice bbls, NY lb.	.06⅛	.07¼	.05¼	.08½	.02¾	.05⅜
Herring, Coast, tks ..... gal.	.30	Nom.	.23	.32½	.15	.23
Lard Oil, edible, prime ... lb.	...	.20½	.09¾	.20½	...	.09¾
Extra, bbls ..... lb.	...	.11¼	.08½	.11¾	.07	.08½
Extra, No. 1, bbls ..... lb.	...	.10	.08¼	.11	.06⅜	.08¼
Linseed, Raw, less than 5 bbl lots ..... lb.	...	.091	.091	.105	.101	.105
bbls, c-l spot ..... lb.	...	.083	.083	.097	.087	.101
Tks ..... lb.	...	.0770	.0770	.091	.081	.095
Menhaden, tks, Baltimore gal.	.28	.30	.25	.35	.15	.25
Refined, alkali, drs .... lb.	.071	.075	.061	.077	.052	.069
Tks ..... lb.	...	.065	.055	.069	.046	.061
Light pressed, drs ..... lb.	.065	.069	.055	.071	.046	.057
Tks ..... lb.	...	.059	.049	.063	.04	.05
Neatsfoot, CT, 20° bbls, NY ..... lb.	...	.16¼	.16¼	.16½	...	.16½
Extra, bbls, NY ..... lb.	...	.10	.08½	.11¼	.07	.08½
Pure, bbls, NY ..... lb.	...	.11¾	.11¾	.12	.12	.13
Oleo, No. 1, bbls, NY .... lb.	...	.13	.10¾	.14½	.06	.11½
No. 2, bbls, NY ..... lb.	...	.12½	.10	.13¾	.05⅜	.11¼
Olive, denat, bbls, NY ...gal.	.80	.83	.82	.95	.76	.90
Edible, bbls, NY ..... gal.	1.65	1.80	1.55	1.80	1.55	1.90
Foots, bbls, NY ..... lb.	.08¼	.08⅜	.07⅛	.08¾	.06½	.07½
Oticica, bbls ..... lb.	...	.13½	...	...	...	...
Palm, Kernel, bulk ..... lb.	.03¾	.04	...	...	...	...
Niger, cks ..... lb.	.04⅜	.04½	.034	.05¾	.031	.03¾
Sumatra, tks ..... lb.	...	.04½	...	...	...	...
Peanut, crude, bbls, NY .. lb.	...	.11	...	...	...	...
Tks, f.o.b. mill ..... lb.	...	.09½	.08¾	.10¾	.06½	.10¾
Refined, bbls, NY ..... lb.	...	.13½	.12½	.14	.07½	.12½
Perilla, drs, NY ..... lb.	.07¼	.07½	.07¼	.08¾	.08¼	.09⅝
Tks, Coast ..... lb.	...	.07	.068	.08¼	.07½	.09
Pine, see Pine Oil, Chemical Section.						
Rapeseed, blown, bbls, NY lb.	.07½	.078	.07½	.09	.08	.082
Denatured, drs. NY ...gal.	.45	.45½	.40	.53	.37	.44
Red, Distilled, bbls ..... lb.	.09⅛	.10⅛	.07⅜	.10⅛	.06⅞	.08⅜
Tks ..... lb.	...	.08¼	.06½	.08¼	.06	.06½
Salmon, Coast, 8000 gal tks ..... gal.	.31	Nom.	.25	.35	.15	.21
Sardine, Pac Coast, tks ..gal.	...	.33	.24½	.37	.13	.25
Refined alkali, drs ..... lb.	.071	.075	.065	.079	...	...
Tks ..... lb.	...	.065	.06	.069	...	...
Light pressed, drs ..... lb.	.065	.069	.055	.073	...	...
Tks ..... lb.	...	.059	.049	.063	...	...
Sesame, yellow, dom ..... lb.	.12½	.13	.12¼	.13¾	.07½	.13¼
White, dos ..... lb.	.12½	.13	.12¾	.13¾	.08	.13¼
Soy Bean, crude						
Dom, tks, f.o.b. mills .. lb.	...	.08½	.08	.10	.06	.08
Crude, drs, NY ..... lb.	.091	.095	.086	.11	.066	.09
Refd, bbls, NY ..... lb.	.096	.105	.091	.115	.071	.102
Tks ..... lb.	.09	.095	.08	.10½	...	...
Sperm, 38° CT, bleached, bbls NY ..... lb.	.099	.101	.099	.101	.106	.11
45° CT, bleached, bbls, NY ..... lb.	.092	.094	.092	.094	.099	.103
Stearic Acid, double pressed dist bgs ..... lb.	.10¾	.11¾	.10	.12¼	.09	.11
Double pressed saponified bags ..... lb.	.11¼	.12¼	.09	.12¾	.09	.10
Triple pressed dist bgs .. lb.	.13½	.14½	.12¾	.15¼	.11¾	.13¾
Stearine, Oleo, bbls ..... lb.	.12	.12½	.09¼	.12½	.05	.10⅝
Tallow City, extra loose .. lb.	...	.06⅜	.05⅜	.07	.07⅛	.05⅜
Edible, tierces ..... lb.	...	.08¾	.07¼	.08¾	.04¾	.07¼
Acidless, tks, NY ..... lb.	...	.09½	.07½	.10¾	.06	.07½
Turkey Red, single, bbls .. lb.	.07½	.08	.07½	.08	.07½	...
Double, bbls ..... lb.	.12½	.13	.12½	.13	.12½	.13
Whale:						
Winter bleach, bbls, NY lb.	.077	.079	.07	.083	...	.072
Refined, nat, bbls, NY .. lb.	.073	.075	.064	.081	.064	.07

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Ask us for details.

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Est. 1834
399-409 Atlantic Avenue
Boston, Mass.
Industrial Chemicals
(CO_2)
Solid Carbon Dioxide

Barium Chloride

A Product of exceptional purity

Barium Reduction Corp.
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CORPORATION
announces with great pleasure that
MAJOR L. L. B. ANGAS
has become associated with them as
Economic Adviser

Major Angas enjoys an international reputation for his accurate economic forecasts. One of his best known books—*The Coming American Boom*—written from London, in July, 1934, accurately projected the future for the American stock market. Other volumes over the past fifteen years have been equally correct in their predictions. Major Angas' views will be issued by Brookmire in a special bulletin (The Commentator) the announcement issue of which will be mailed upon request.

Write for Bulletin K 40

BROOKMIRE CORPORATION, 551 Fifth Avenue, New York

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- A kier boiling assistant which gives a better white
- To be used only with soft or softened water
- For full particulars apply—

GENERAL DYESTUFF CORPORATION

230 Fifth Avenue, New York, N. Y.

"We"—Editorially Speaking

The Ford publicity department, in announcing a new plant to make molded automobile parts from soybean plastics, claims that this $5,000,000 installation with 86,000 square feet will be the largest factory in the world devoted to processing farm products for industrial use, which sounds to us like one of those automobile claims that need verification, and we should like to know the vital statistics of U. S. I.'s molasses-alcohol plant and/or the corn-starch operation of Corn Products Refining and/or the butanol-acetone plant of Commercial Solvents.

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A prophet may be without honor in his own country, but the *Midland* (Michigan) *Republican* hails Dow as "a national institution."

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Those ingrates who dare to doubt that the New Deal has done "something" for the chemical industry are corrected and confounded—that is, if they are manufacturers of alum—by the news that, as a direct result of the $12,000,000 Tygart Valley flood control dam project, the city of Grafton, W. Va., which used to worry along on a single carload of alum a year for its filtration plant, has already ordered a second car, and indications, according to *The Grafton Sentinel*, are that a third carload will have to be purchased before very long. All of this is due to the turbidity of the water due to the dam's construction upstream.

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"Fans," by Theodore Baumeister, is a book about blowers, not baseball. Which reminds us of a nice article about the triumphs of synthetic chemistry which we wrote for the *Atlantic Monthly* several years ago entitled "Substitutes" and hailed by a reckless and rollicking relative as—"Ha! I see a football story."

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From Billy B. Van, humorist and soapmaker, via *Printers' Ink*, we pass on to you the following perfect example for a concluding paragraph for a form letter to help sell chemical contracts next month: "Carload prices will be made on request. The above prices are all freight allowed to destination and subject to the usual 1 per cent. cash discount in ten days. Since these prices went into effect the raw material market has declined further, and for this reason we hope that you will give us an opportunity to quote on your requirements for shipment during the next ninety days."

If reciprocity business grows much greater one of the industry's outstanding sales managers claims he will be having the president, three vice-presidents, and the director of research all working for him. If he thinks that means he will be able to take a long vacation, no doubt he is right—so long a vacation it will be permanent; for reciprocity kills real selling and makes real buying a joke.

Fifteen Years Ago

From our issues of September, 1920

Pittsburgh Plate Glass plans purchase of Columbia Chemical, Barberton, O., and will capitalize consolidation at $37,500,000.

E. H. Killheffer, vice president Newport Chemical Works, sails for Europe this month.

Sixth Annual Chemical Exposition opens.

General Chemical orders 50 tank cars, with a capacity of 70 to 75 tons of sulfuric acid, from American Car & Foundry.

C. C. Speiden, Innis-Speiden, recently returned from Europe, says that the dye plants in Germany are working part time only, due to shortage of coal.

Mathieson Alkali, New York City, establishes branch offices at Chicago, Philadelphia, Providence, and Charlotte, N. C.

American Agricultural Chemical earns an $8 dividend on the $31,600,000 common stock, with a margin of about $3 or $4 a share.

International Chemical Congress meets in Rome.

Charles H. MacDowell, president Armour Fertilizer, is knighted by King Victor Emanuel for his work as director of the chemicals division of the War Industries Board.

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Believe it or not—

The Professor of *Industrial* Chemistry at one of the largest state universities believes that Monsanto "invented" ethylene glycol.

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It's a debatable question whether the New York Giants or Franklin D. Roosevelt slipped further or harder during the late lamented vacation period.

That Lot's wife, the inquisitive lady who was turned into salt, ought to be a chemical goddess, is the theme of another one of the chemical tourist articles to be published next month. It tells the story of Mr. Haynes' visit to the Halowax, Sharples Solvents, Penn Salt, and Michigan Alkali plants at Wyandotte.

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Will the wonders of chemistry never cease? Now a well known consulting chemist on the Pacific Coast is hiring out as Sherlock Holmes to detect "doctored" second-hand automobiles. The old trick of a shot of ether in the gasoline tank is as nothing compared to some of the new ways of putting pep into a decrepit car. One of the neatest is the addition of sawdust to the crankcase to eliminate rattles.

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The prosaic character of chemicals as an advertising subject chronically bothers some of our best friends, and here is a helpful suggestion. Look up Vincent Astor's estate advertising. It gives you the impression that that distinguished socialite is just sitting around waiting to show you some of his vacant apartments, and that he might even be persuaded to repaper the dining room for you with his own lily-white hands. This theme might be easily chemicalized—"Mr. Edwin Madison Allen of Park avenue and Lake Charles, La. would be delighted to show you some pretty white samples of soda-ash," or "Mr. and Mrs. Ernest K. Halbach announce the arrival of a new member of the 'IG' vat dye family, Sky-blue-pink, X7," or "Mr. Edgar Monsanto Queeny requests the pleasure of your contract for phosphoric acid for 1936."

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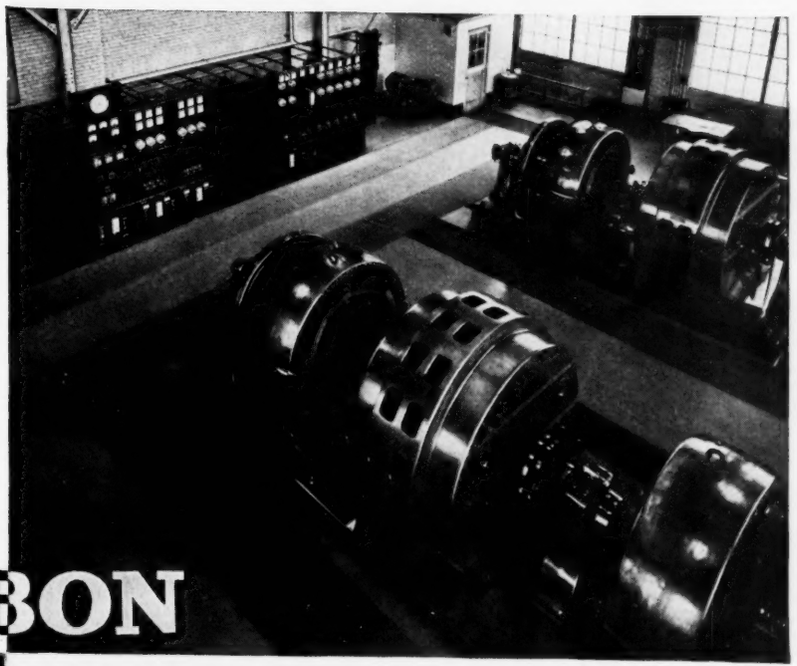
Just twelve months ago (in our September, 1934, issue) we asked two questions:

"First, can prosperity be restored by raising wages and prices? If so, can wages and prices be raised by law, and again, is such economic legislation likely to accomplish permanent and favorable results?

"Second, can prosperity be guaranteed by a centralized control over agricultural and industrial production and prices? If so, can that control be made by law complete enough to be effective and can it be wisely and fairly administered by an elective form of Government?"

We still think that they are a pretty good yardstick by which to judge both the deeds of the New Deal and the criticism of its opposers.



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Quotations, samples and technical cooperation upon request.

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- Caustic Soda—*Flake*
- Caustic Soda—*Solid*
- Sodium Hypochlorite Solution
- Hydrogen Peroxide
- Mono Sodium Phosphate
- Di Sodium Phosphate
- Tri Sodium Phosphate
- Sodium Sulphide
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- Water Treating Compounds

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